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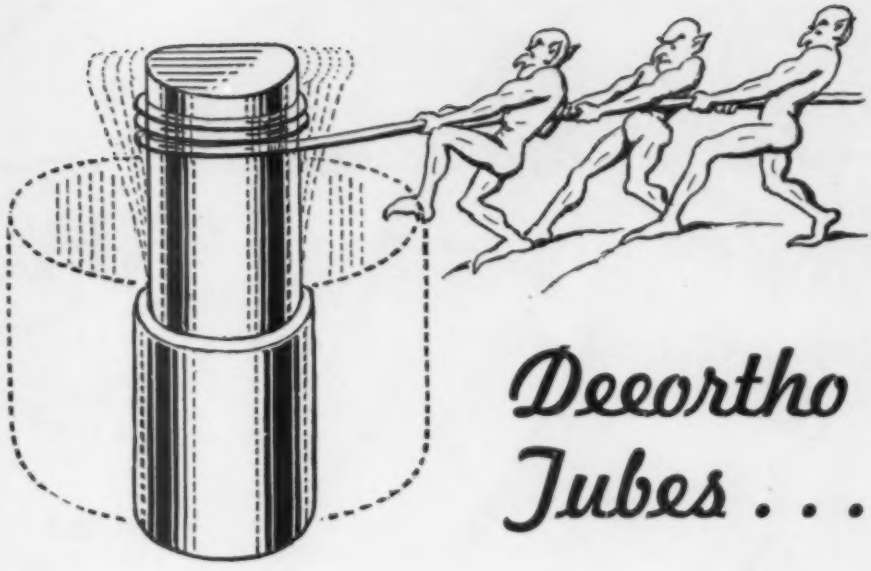

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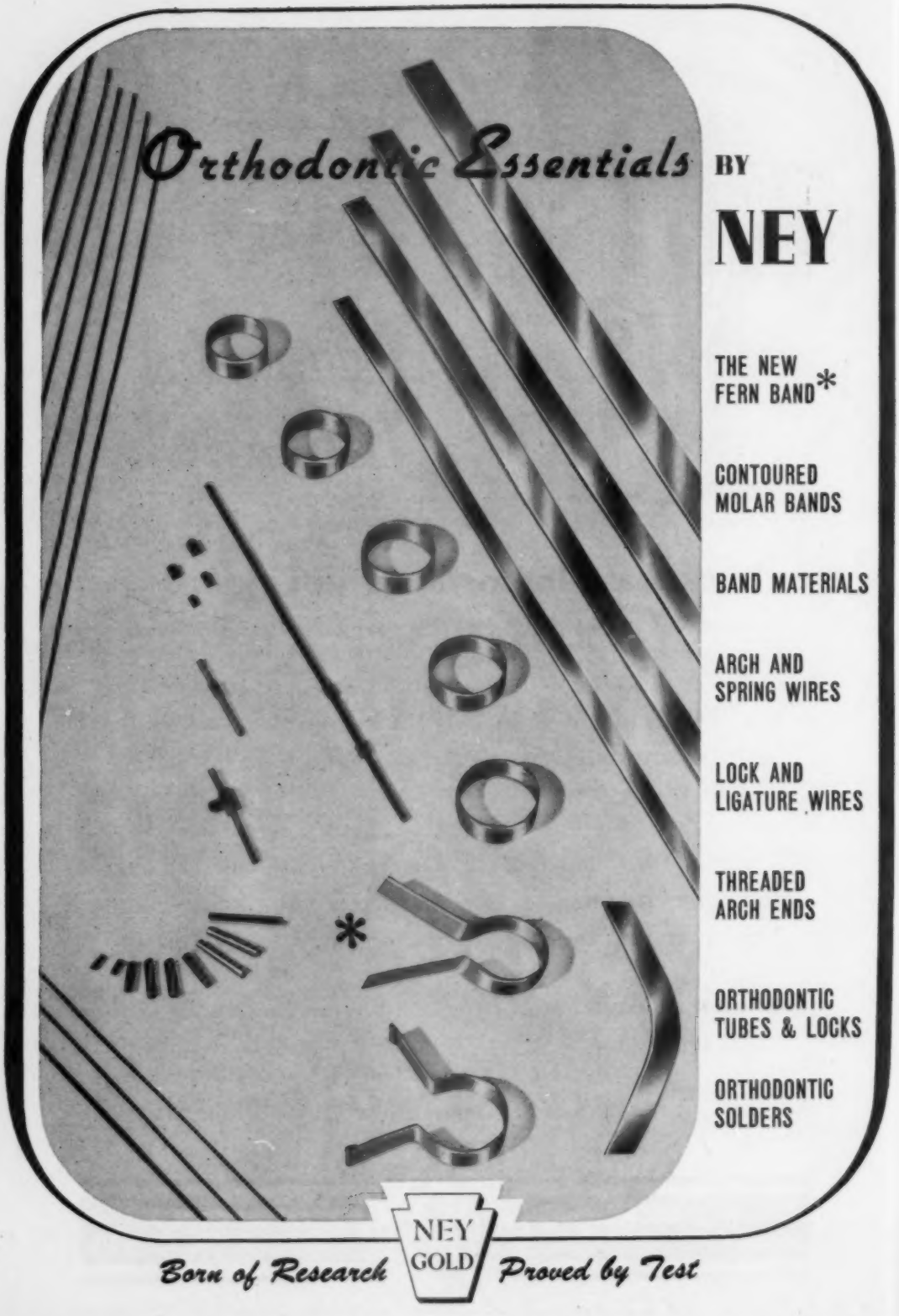

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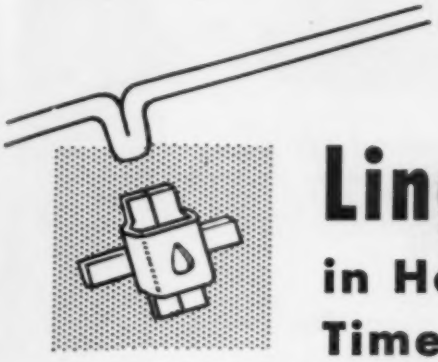

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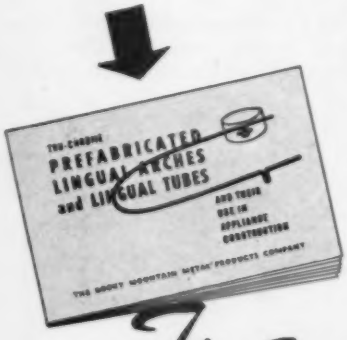

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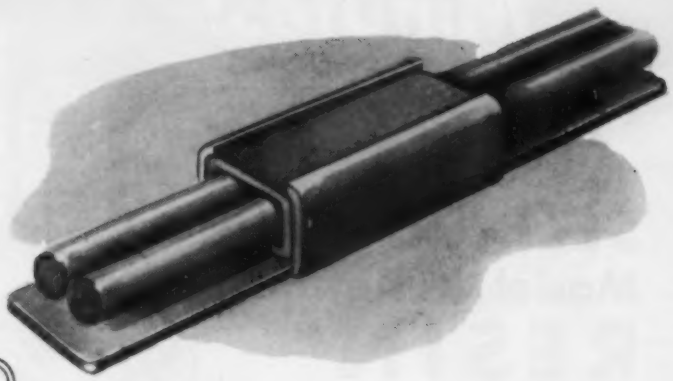

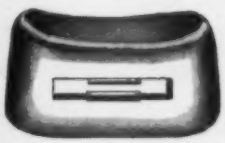

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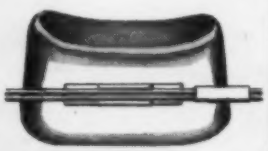

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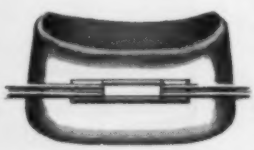

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American Journal
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VOL. 36 JUNE, 1950 No. 6

Original Articles

CEPHALOMETRIC APPRAISALS: THEIR USE IN DAILY CLINICAL PRACTICE

LAWRENCE FURSTMAN, D.D.S., BEVERLY HILLS, CALIF.

ONE of the many problems of interest to the practitioner of orthodontics today is the use of cephalometric appraisals and their daily clinical application.

Definite knowledge of growth and development has been gained from research studies with the cephalometer. The instrument is now increasingly accepted as the best means for studying certain important phases of clinical problems.

In 1931, both Broadbent, of Cleveland, and Hofrath, of Düsseldorf, simultaneously published a cephalometric x-ray technique. Practically all research on growth and development of the head that is of particular interest to our specialty has followed along the technique outlined by Broadbent. All of us should be familiar with his work, as well as with the work of Brodie, Downs, Higley, Margolis, Thompson, and Wylie, to mention only a few of the leaders in this field. Their investigations were initiated by Broadbent's conception of a method of growth study.

During the past eighteen years the general consensus of opinion among practitioners has been that cephalometric techniques were fine for the research men in universities but they could not be utilized to advantage in private practice.

A number of factors contributed to this feeling: the time element involved in the study of a new technique, the complacency that goes hand in hand with a successful practice, the natural disinclination to change smoothly running office routine, and the consideration of whether purchasing the equipment necessary to permit such technique would be too great a financial risk, for certainly the expense of installation was no small item.

This thesis was submitted to the American Board of Orthodontics in partial fulfillment of the author's requirements for certification.

With these thoughts subconsciously present we can truthfully say that members of our specialty were somewhat reluctant to acquire x-ray machines, cephalometers, tracing tables, and many other items of equipment immediately upon reading Broadbent's report entitled, "A New X-ray Technique and Its Application to Orthodontia," published in April of 1931.

It is quite true that at that time Broadbent was only stirring the surface of our enthusiasm with a new toy which still appeared to be of little practical value.

It remained an instrument of little known practical value for many years. During these years the men in scientific laboratories and universities were amassing evidence on growth and development and on variations from the normal developmental pattern.

Gradually more and more work was presented in the literature which either proved or disproved treatment procedures and orthodontic thinking.

Following the appearance in orthodontic literature of some of these studies, we became aware of a glimmer of enthusiasm for these methods in the minds and thinking of some practitioners. Here at last was a truly scientific means of approach to our daily problems and one that was also of proved practical clinical value.

Brodie's work on the growth pattern of the human head from the third month to the eighth year of human life is familiar to all students and practitioners of orthodontics. Unfortunately for us, this work stops at a chronologic time that is usually below the low age range of most orthodontic practices.

This report, in conjunction with an earlier study made by Brodie and coworkers, was the first definite proof that some phases of orthodontic thinking were incorrect. The time had come to revise our techniques, our thinking, and our standards.

Following these papers by Brodie certain concepts of treatment were modified and changes began to appear in orthodontic thinking. During the years immediately following the appearance of his study on growth and development, other investigators were assembling data and digesting their material. It is significant that these men were all students of Brodie, who can perhaps be held responsible for channeling their thoughts into these fields.

In rapid succession came reports by Thompson, Wylie, and Downs, all of inestimable value to the practitioner.

Thompson in his studies on the normal physiologic rest position of the mandible and with his observations on the freeway space, unlocked the key to many problems in prosthetic dentistry, as well as in orthodontics. More than that, he changed radically, or at least disproved, certain concepts that had long been held valid by the entire profession. With his studies came a most valuable reference point for use in cephalometric appraisals.

Wylie, with his studies of the overbite problem and with his invaluable assessment of the anterior-posterior dysplasias found in many children, made a major contribution to our knowledge of disharmonies in growth pattern. Now we had a means of definitely locating craniofacial dysplasias. It was also a guard against overenthusiasm in our case analysis and prognosis for any patient.

The work of Downs on a group of untreated young adults whom he considered normal is classic. Those of us fortunate enough to hear him in Santa Barbara in the spring of 1947 perhaps at that time did not realize the full significance of his work. Here a normal range was established on the basis of untreated normal occlusions. We now had a guide to our diagnostic thinking, a working method of evaluating facial patterns with respect to a normal range of variation, and also a definitive means of assessing tooth movements during and following orthodontic management.

Briefly Brodie and associates first appraised a number of cases following orthodontic treatment. Next Brodie brought forth his studies on facial pattern and was followed by other studies of the normal by Thompson, Wylie, and Downs.

Now, pretreatment assessments of patients could be a reality following certain proved concepts. Of more importance is the fact that the contributions made by Brodie, Downs, Wylie, and Thompson all have definite clinical value for the quantitative analysis, by means of serial study, of any patient undergoing orthodontic treatment.

Since all of these important works are based on lateral cephalometric roentgenograms, the operator who is able to have serial studies of this sort for every patient in his practice has a tremendous advantage.

True enough, some of our greatest clinicians have practiced without this aid. It is also true that many famed members of our specialty today have not as yet used this appraisal technique.

Yet, we must realize that the clinicians were striving to find the same information on the basis of clinical experience—to cite one point only, the axial inclination of the lower incisors in relation to the mandibular plane. This study has been analyzed radiographically by Margolis and others. It is also significant that Tweed arrived at a comparable range of normal inclinations of the lower incisors on the basis of clinical observations.

Following these observations we feel that in any case where we find lingual inclinations of the lower incisors we can have every expectation of treating the patient in the ideal manner. This statement, of course, must be qualified. We cannot include Class III malocclusions in this group, or any Class I case with teeth that are extruded from the arch.

Since the first publication by Broadbent in 1931 there have been many other men interested in the roentgenographic cephalometric technique. The instrument as devised by Broadbent for the Bolton study was primarily a research instrument with an almost prohibitive cost for an individual office. Because of this and because of other factors, attempts have been made to modify this instrument, or to establish entirely new designs that were more practical for individual offices.

Some of the primary exponents of these efforts were Higley and Margolis. It is not my desire to compare these instruments with the Broadbent cephalometer. The important thing to remember is that as more and more of us become interested in this cephalometric appraisal type of study, the procedures throughout the country become more standardized. Techniques are developed

Fig. 1.

Fig. 2.

Fig. 1.—At her initial examination this patient's history revealed three previous periods of orthodontic treatment: in the complete deciduous dentition, the mixed dentition, and the permanent dentition. This appears to be an orthodontically created double protrusion.

Fig. 2.—Cephalometric x-ray taken for assessment purposes after five months of treatment. (Original film shown in Fig. 1.)

that are applicable to daily practice for routine studies. With the great mass of material in the current literature it becomes easier to absorb parts of this knowledge into the usage of daily practice.

In every well-managed practice, an assessment is made of each individual's problem before appliance work is initiated. It is an essential part of our program to have a case analysis and treatment plan for each patient. This case analysis may vary depending upon an operator's training, background, and judgment. While we may approach this plan by various routes, our primary responsibility is to determine the best way possible to correct or alleviate any existing disharmonies, either between individual teeth, or between the two dental arches, or in the relationship of the dental arches to face and cranium.

Fig. 3.—Cephalometric x-ray taken for assessment purposes after ten months of treatment. (Original film shown in Fig. 1.)

The case analysis should be based on as much information as possible: oral examination, physical history, study models, dental x-rays, photographs, and lateral head x-rays for cephalometric appraisals. Wherever possible it should be based on scientific rather than empiric findings, and all this should be done before the treatment plan is developed and therefore before any appliance work is started.

Diagnostic procedures in orthodontic practice in most offices consider the Frankfort horizontal plane a basic reference point.

True, it is possible to obtain a fairly accurate location of this plane by the use of profile photographs, or by Simon's gnathostatic technique, or even other methods. The true relationship of the denture to this plane is found most accurately and easily through the media of x-ray.

In diagnostic procedures a true knowledge of the problem that presents itself to us is an essential part of our analysis, and greatly aids our clearness in logically analyzing our problem.

In order to recognize certain basic disharmonies in the denture and its relation to the skeletal pattern, a lateral head x-ray, plus a knowledge of normal variations in growth, is a basic necessity. It is strange how quickly certain disharmonies become apparent on even casual observation.

We have all had cases of what seemed to be identical malocclusions, for example, two youngsters with malocclusions that could be termed Class II, Division 2 by Angle's classification. When treatment was instituted one case managed very well and the other became a problem. This situation is quite common. It seems that the easily treated case was not a true Class II, Division 2 case at all. In reality this problem was one of a distally locked mandible.

The treatment of these cases can be expedited. It is simply a question of utilizing Thompson's analysis of freeway space, in conjunction with a study of the path of mandibular closure.

With routine study of these factors in individual patients many pitfalls can be avoided. No competent practitioner of today would dream of starting treatment without having dental x-rays of the patient. There are too many possibilities of trouble that must be avoided to allow treatment of a patient to be started without this study. Supernumerary teeth, missing teeth, and dental caries are only a few of the more obvious possible findings. The importance of these x-rays is known to all. By the same token it is safe to predict that all practitioners will eventually realize the need for appraisals of the cephalometric type.

It is unimportant whether the operator has the equipment available in his office as long as the equipment is easily available for his patients. As is only natural, those who have the equipment in the office will undoubtedly take advantage of its presence as they would use any other item of equipment.

While it is not possible for all of us to have a Broadbent cephalometer or one of the head positioners designed by men such as Higley or Margolis, it is relatively simple to build a cassette holder that embodies rods for the porionic axis. The important thing to remember is a fixed target distance with the patient as close to the film as possible.

To be more specific, the film cassette must have a fixed relationship to the source of the rays. The head of the subject must always be placed in the same position in relation to the film. With these three factors constant we can be certain that the films on which we base our serial studies will be standardized. This standardization allows us to make definite quantitative measurements of treatment changes in each individual by means of serial study. These films do not have correctional scales to correct for distortion due to enlargement. For the purpose of the practitioner whose main interest lies with individuals rather than with large samples of patterns, the resulting studies are quite adequate.

The porionic point is a basic reference landmark in all our studies. Because the ear rods are made of a plastic material there is some radiopacity in this important area. A lead shot embodied in the superior curved surface of the

left ear rod will give a fairly accurate landmark. The exposure technique as used by me endeavors to have the soft tissues well outlined as well as to have the bony structure well detailed. Because of the short exposure time used there

Fig. 4.

Fig. 5.

Fig. 4.—Marked disharmony of facial pattern presenting a difficult orthodontic problem.

Fig. 5.—False mandibular closure position taken by patient shown in Fig. 4 in endeavor to hide facial deformity.

is considerable difficulty in determining the porionic point accurately. To eliminate error a template can be made by exposing a film in the positioner in the normal manner. This template enables the correct porionic point to be easily established for each film.

It is necessary to take at least two pictures for the first analysis, one with the teeth in occlusion, the second with the mouth in physiologic rest position. In order to get this second picture correctly it is necessary to have the patient relaxed. Usually idle conversation will do. In this way even an apprehensive patient can be relaxed after having the closed bite position taken. By the use of intensifying screens an exposure time of one-half a second is practical. With such a fast exposure time the problem of keeping the patient relaxed while in the normal physiologic rest position is simplified.

By comparison of the two films we can immediately get an idea of the patient's general overbite problem, because these films will enable us to determine the freeway space plus any abnormal mandibular closure path that may be present.

If further information concerning the mandibular condyle is desired, a third picture can be taken with the mouth wide open. This throws the condyle forward out of the area of radiopacity caused by the ear rods and brings it into much sharper definition. The work of Riesner on condyle shapes in relation to types of malocclusions is of interest here.

The Department of Orthodontics at the University of California advocates the use of four films for the primary analysis—one posterior-anterior and three lateral plates taken in the following positions: closed mouth, physiologic rest, and wide open, to aid in determining condyle shape.

One of the greatest deterrents to the universal use of routine studies of this type in private practice is the necessity of tracing films. True, it is not easy and it is time consuming. Yet any step in diagnostic procedure benefits the operator in direct proportion to the effort and time spent in the study.

The techniques of tracing the films and of making the analysis are not insurmountable problems to the busy practitioners. It is simply a question of having the desire. If the desire is present the problem is simple.

Methods used in office procedures will vary according to equipment and other factors present. Since the majority of work as presented in the literature has been at a sixty inch target distance, from anode to film, it is to our advantage to follow the same procedure if at all practical.

In this way our film images will be of standard size with a minimum distortion factor, and it will be easy to follow the new developments as read in the literature. It will also be possible to check our own personal findings fairly accurately against those of the well-established research center. The term "fairly accurately" is used advisedly because most office equipment will not embody the use of correctional scales used in compensating for size distortion.

It is interesting to note here that the Department of Orthodontics of Northwestern University has outlined a technique for lateral head roentgenograms using the ordinary dental x-ray machine. Thompson has influenced their

prosthetic department greatly with his studies of normal physiologic rest position of the mandible. These studies are of increasing interest and value to the prosthodontist, as well as to students and practitioners of orthodontics.

Once our lateral head plates are obtained, a wealth of new diagnostic aids become immediately available, some of which are: the size and position of the tongue, the relative position of the mandible to the face and head, the amount of gonial angle, the general facial pattern of the individual, the angle of inclination of the lower incisors, as well as many other useful facts.

The study of serial cephalometric pictures gives an indication of the growth potential for our patients. In this way we can determine many of our limitations in technique and treatment. In reality the assessments at our disposal enable us to have a much greater comprehension of the problem facing us. From these facts we can establish a fairly accurate prognosis for the patient. Since there are many limitations to treatment, regardless of the appliance used and the operator's ability, it is sometimes wiser to try for the best result possible rather than the best possible result.

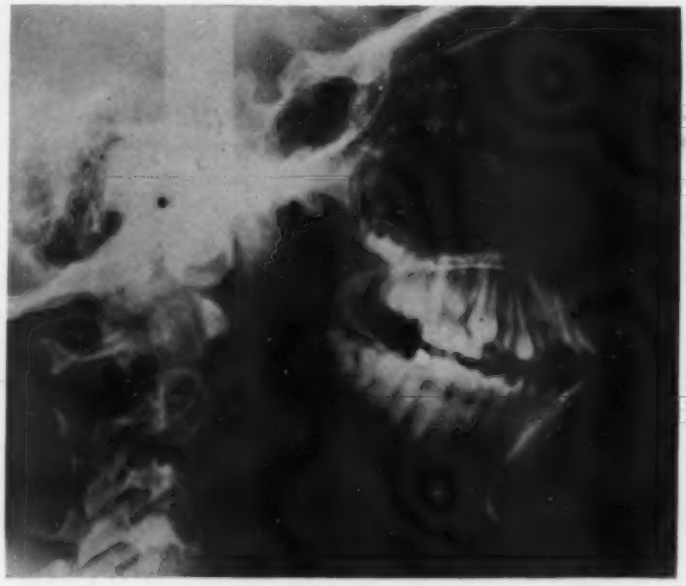

Fig. 6.—Bad facial pattern. This child's problem is complicated by an open-bite and a perverted swallowing habit. Prognosis, unfavorable.

Certain variations in rates of growth can produce temporary disharmonies that require correction. Serial x-ray studies are important in order to determine the pattern of growth plus the rate of growth. Since different individuals grow at different rates of speed and at different times, serial pictures will give us a gradient. A study of the growth or "Y" axis will show the direction of the facial growth pattern.

We know from the work of Brodie that the individual facial pattern does not change: "From all evidence it seems that the Morphogenetic pattern of the human skull is established at a very early age and that once attained does not

change.'' Besides this we must remember that orthodontics affects the teeth and only the underlying alveolar bone. The basal bone is not affected. ''Actual bone changes accompanying orthodontic management seem to be restricted to the alveolar process. The ability of this structure to adapt itself to changes in the positions of the teeth is extremely great.''

We know also from his work that the normal pattern for each individual can be determined only by the existing pattern present. We cannot try to treat all cases to the same final result, nor can we select any particular type of face as a normal and endeavor to treat all cases to that particular typal pattern.

It is surprising how quickly cephalometric appraisals will help in office procedures—to cite one instance only, the selection of cases that require the removal of tooth units. On returning to practice after military service it was astounding to learn, through conversations with other men, that the incidence of extraction in certain offices ran as high as 60 per cent. Indeed, this figure was low for some individual practices. It appeared that the standards used for selection of these cases was entirely by means of empirical clinical experience on the part of the individual operator. Surely methods of this sort are not to be continued when a truly scientific method is available. Cephalometric appraisals can give both indications and contraindications for this procedure.

Here again a knowledge of the growth potential of the patient is of extreme value. Too many times cases treated by extraction have looked well balanced when finished. Unfortunately, when the lower border of the mandible receives its final growth at gnathion, the case becomes more and more dished in appearance.

The value of these appraisals in determining facial pattern cannot be overestimated. Nor can we forget the clinical need for the knowledge of the location of areas of disproportion. These disproportions manifest themselves in lack of balance in the various facial structures. This lack of balance is the thing we are trying to correct clinically by means of orthodontic management. If it is possible for us to recognize disharmonies and lack of balance in the patient, this knowledge is helpful in planning treatment and our chances of having a good clinical result are greatly increased. There is no doubt that we will frequently find cases that have reacted quite differently under appliances than we had supposed, and this may be true of our finest clinical treatment.

Our primary responsibility is to obtain a good clinical result embracing esthetics, function, and stability. It is also our responsibility to determine why this should occur and to learn as much as possible about treatment changes in order to increase the fund of knowledge for those who will follow in our footsteps. To improve continually our knowledge, our judgment, and our ability is a basic requisite for the progressive practitioner.

For those who shudder at the thought of all the work involved in pursuing these studies it may be wise to recall certain memories: the technical difficulties encountered when first starting in the field of orthodontics, the hours of study, or the self-discipline necessary to learn new methods of evaluation of any phase of our specialty that was presented to us after we had started to practice. Fortunately, we find that constant repetition of a certain task usually leads to

Fig. 7.

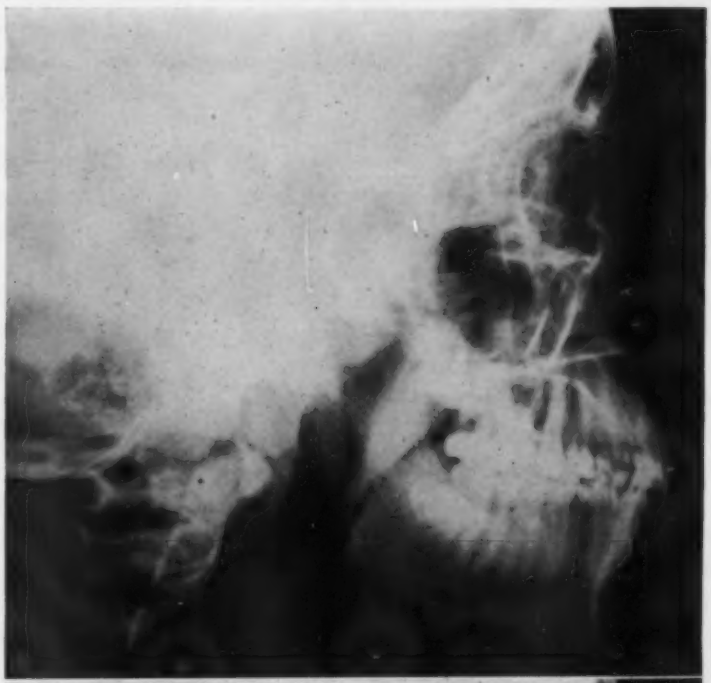

Fig. 8.

Fig. 7.—Common type of deep overbite problem.

Fig. 8.—Usual rest position of patient shown in Fig. 7. Physical history of this patient includes a background of several allergies associated with habitual mouth breathing.

greater ease and competence. The advantages of this method of study and analysis greatly repay the time and effort spent in learning the necessary techniques.

The amount of time saved in treatment of any case that is accurately diagnosed can more than make up for the time spent in tracing and studying a dozen other cases.

In studying the appraisal sheets there is one important fact that must be kept in mind. You will note that there are extremes in measurements from low to high. There is also a mathematical computation of the mean. Remember that this mean average does not necessarily imply normal.

The most important thing to remember about this work is that the figures on normal occlusions are only a guide. This method is not a yardstick. Further, it is not necessary to have a true cephalometric x-ray plate for a case analysis. A plain lateral headplate is sufficient. These lateral x-rays do not eliminate the need for profile photographs. For best results it is suggested that all case analyses be made in conjunction with a study of the photographs, history, dental x-rays, and the models. Strangely enough, we can have seemingly identical malocclusions on plaster models and find they are quite dissimilar when analyzed in this manner. This, perhaps, will account for experiences that we have all had, of starting two very similar-appearing cases and having one respond beautifully while the other for some unaccountable reason lags way behind in treatment.

Orthodontics should not be considered from the standpoint of the teeth alone. The position of the teeth in many instances is simply the manifestation of disharmonies of various denture parts. Our purpose is to locate and, if possible, correct these areas of disharmony.

Serial studies taken during treatment can give an accurate record of all changes being made in arch relationship. We will also gain a very accurate knowledge of the positioning of the lower incisors regarding their angle of inclination and bodily protrusiveness. Here again the danger of establishing a double protrusion through the media of treatment can be observed early and, if necessary, preventive measures can be established. The entire lateral balance of the face as well as conformance to pattern can be supervised.

The analysis of dentures studied by methods as originated by Drs. Downs, Wylie, and Thompson gives a clear picture of the degree of disharmony of balance of facial form. This should lead to a plan of treatment aimed at changing relationships for the express purpose of correcting disharmony. Should the case have good balance we do not wish to move the teeth into a position that will cause imbalance.

The knowledge of the variations in relationships of the component parts of the face found in excellent occlusions affords an opportunity to locate areas of disproportion when analyzing malocclusions.

Within the ranges as determined from study of normal occlusions we can expect to treat a malocclusion to a well-balanced face, provided that we maintain a well-balanced relationship of denture to skeletal pattern.

Cephalometric appraisals are not a panacea for all ills. They do give us a better means of establishing our diagnostic procedures on factual findings.

Fig. 9.

Fig. 10.

Fig. 9.—Beginning Class III malocclusion. Note the extremely high mandibular plane angle.

Fig. 10.—This malocclusion shows a tooth and cuspal interference that prevents a normal path of mandibular closure.

Fig. 11.

Fig. 12.

Fig. 11.—Double protrusion and poor facial pattern. It is questionable whether treatment is indicated in this case.

Fig. 12.—Good facial pattern. Prognosis in this case is excellent.

For years now we have been witnessing a running fight between science and empiricism. In so far as we go beyond blind trial and error, we rely on observations, on theorizing or guessing, and on verification or testing by further observations and perhaps experimentation. This procedure, after years of elaboration and refinement, came to be known as scientific method.

Empiricism in dealing with certain phases of our specialty is admittedly inevitable. It is doubtful whether we will ever be able to eliminate such methods completely. The factor of prime importance is our ability to transmit this knowledge to other individuals along with factual proof.

These two methods of procedure are supposed to get along harmoniously by dividing any field between them. The only trouble with this scheme is that the division of territory cannot be maintained. Scientific methods have invaded the surrounding territory everywhere.

It is clear that the present state of unstable equilibrium between science and empiricism cannot continue indefinitely. We must move forward or back. Either science and scientific methods must be made to stay within their appointed bounds or they must be given sovereignty, and in all cases of conflict they must have the last word. In that alternative the scientific method becomes the only final road to truth.

Much energy has been expended in constructing "reconciliations" between science and empiricism on the theory that the solution of the conflicts was a matter of arriving at a proper division of territory between scientific and empiric quests for truth.

This is not a problem of "reconciliation" but of reorientation. The notion that the scientific and empiric points of view can be maintained indefinitely side by side is becoming more and more untenable. The necessity for basic reorientation means that we are witnessing one of the turning points of our profession.

Certain changes in orthodontic thinking come a bit more slowly perhaps than changes in technical procedures. Almost anything that promises an easy way to faster and better clinical results is immediately accepted and exploited. On the other hand, the usage of ideas that require arduous study and self-discipline with apparently small immediate clinical or practical value is accepted much more slowly. This seems to be a natural characteristic of present-day society and one that should not be criticized too severely.

It is hoped that more and more clinicians will take advantage of this cephalometric method of study in order to aid in case analysis and treatment planning, to aid in becoming more judicious in the selection of cases requiring extraction during treatment, to help in proving or disproving various treatment procedures by means of accurate scientific evidence, and, above all, to have a more thorough and accurate knowledge of what we are doing.

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Erratum—An Apology

In the article entitled "Frances P. Bolton Honored," which appeared on page 381 of the May issue of the Journal, the second paragraph from the bottom of the page should read as follows:

"Assisting Dr. Broadbent in this research, which produced between forty and fifty thousand plaster casts of children's teeth and an equal number of x-rays, have been Dr. Harold G. Sheakley (*graduated* in 1929) and Dr. John W. Richardson (*graduated* in 1932)."

PROFESSIONAL ETHICS

W. R. Alstadt, D.D.S., Little Rock, Ark.

FOREWORD

THE utmost cooperation of the orthodontist, the dentist, the physician, and the surgeon is often necessary for the welfare of the patient. The time has now come when each respects the other's training, his ability, his sincerity, and his desire to cooperate for the best interest of the patient. During the past few years when all practitioners have been extremely busy and recognizing the fact that the threat of socialized medicine and dentistry may become a reality in the not too distant future, perhaps it would be well for us to stop and review the backbone of our profession—ethics.

Ethics is not a local affair—the personal conduct of the orthodontist toward his patients and the type of orthodontic treatment received all reflect in the patient's attitude toward all orthodontists. It is the duty and moral responsibility of each orthodontist to see that this public opinion of our services is kept at the highest level. I have been most fortunate in the experience obtained while serving on the Public Relations Committee of the Southwestern Society of Orthodontists, being on the Arkansas State Board of Dental Examiners for the past several years, and in serving on the Legislative Council of the American Dental Association. In these many contacts with older men in my profession, I feel that I have been extremely fortunate in receiving their advice and their constructive criticisms relative to the highest traditions of the dental profession, and to orthodontics in particular. To all of these men, I am deeply indebted.

PROFESSIONAL ETHICS

The subject of professional ethics should be reviewed in the literature and on our scientific programs periodically, not because many of our fellow practitioners willfully violate the code of ethics and their sense of personal honor, but because under the stress of modern-day living some of us may unconsciously fall into little traits or characteristics which are not for the best interest of the orthodontic profession or the public. With this thought in mind, I have attempted a very difficult assignment, that of reviewing professional ethics with the idea in mind that perhaps, by calling to our attention a few of the incidents which occur daily in the practice of orthodontists everywhere, we may stop and realize that we are unconsciously letting our fellow practitioner down. We all agree that orthodontics is a wonderful profession; and in my opinion one of the most beautiful tributes ever paid to our specialty

Presented at the meeting of the American Association of Orthodontists, Chicago, Ill., May 10, 1950.

was given by Dr. C. N. Johnson in an editorial in *The Journal of the American Dental Association*, January, 1926. It is as follows:

Orthodontia

The science of orthodontia came into the dental profession as a distinct benefaction. Groping at first in the mists and shadows of experimental uncertainty, it has emerged into the clearer atmosphere of a brighter dawn, where its achievements are penetrating the clouds and shedding sunshine over the hearts and minds of men. Sponsored by a small band of noble and devoted enthusiasts in the beginning, it has swept across the horizon of our professional activities till it embraces today the best energy of very many earnest practitioners, with an ever-increasing interest on the part of the profession and the public at large.

And what a blessing it has all been! Think of the countless lives it has sweetened by its beneficence. It has freed humanity from one of its most glaring deformities, and has transformed the hideous imperfections of Nature into the essence of symmetry and beauty. It has waved the magic wand of its subtle art across the distorted features of little children, and lo, they have come forth perfect in the image of divinity. It has relieved the aching hearts of mothers, and added to the joy and pride of doting fathers. It has removed from budding youth the blight of prejudice, and destroyed the handicap which threatened to mar a human life.

It has added to health, to beauty, to opportunity, to advancement. It has snatched from many a sensitive child the horror of derision, and planted in his heart the seeds of hope and confidence and courage. It has given children a fair chance where Nature had threatened to trample them under the ruthless feet of deformity. It has sweetened the lives of countless youths, and made possible careers of achievement and success. It has turned despair into hope, and discouragement into the very joy of life.

It has, by its marvelous artistry, molded the human countenance into lines as fair as those of Apollo, and has changed the features of a freak into the profile of a god. It has wrought modern miracles great as those recorded in the script of ancient days, and made the impossible of yesterday the routine and commonplace of today. It has spread the blessings of beauty and harmony over the blighted lives of myriads now on earth, and will do the same for myriads yet unborn.

Out of the chaos of the past—the doubt, the dread, and the despair of disfigurement—has come this beneficent science, to bring solace to the sons of men. And the end is not yet. There are greater achievements ahead, and the future holds high the banner of promise and of pledge.

In the glowing east, we see the many-tinted bow beckoning in the dawning of a better day, when "all the children of all the people" shall be brought under the blessings of this benevolent art, and the cry of despair coming from the hearts of little children shall be banished from the ears of men.

When the possibilities and significance of orthodontia are fully recognized by the world, there shall be recorded for dentistry one of the greatest achievements and greatest tributes that have ever fallen to the fortunate lot of any calling.

With such faith expressed by such a great man and by many others in all professional branches of medicine and dentistry, it behooves each one of us to analyze ourselves a little closer in our relationships with our patients, with our general practitioners of dentistry, with our medical practitioners, and with other orthodontists.

There are many phases of ethics which could be discussed at great length, such as those dealing with (a) advertising, (b) cards, letterheads, and announcements, (c) directories, (d) office door lettering and signs, (e) split fees, commissions, and rebates, (f) patents and copyrights, (g) tooth cleansers, therapeutical agents, and exclusive methods, (h) unjust criticisms, emergency service, consultation, and (i) groups, clinics, and contracts. It might not be unwise for each one of us to review our own actions regarding each of the items mentioned. If in doubt as to any of the points mentioned, consult the Code of Ethics of the American Dental Association, which is the Code of Ethics of the American Association of Orthodontists, and the Code of Ethics of the State Board of Dental Examiners of the state in which you practice.

The discussion of ethics is not new, but, as wisely said by Dr. Frederic T. Murlless, Jr., "The wisdom of the ages renews its force when again said convincingly." With that thought in mind I feel that perhaps a review of the most frequently violated principle of our Code of Ethics ([h] unjust criticisms, emergency service, consultation) is especially apropos at this time.

Unjust Criticisms, Emergency Service, Consultation.—Every orthodontist who has ever practiced for any appreciable length of time can readily recall numerous unnecessary and unpleasant situations that have arisen due to his own or someone else's deliberate or unconscious remarks or actions.

Honest differences of opinion between orthodontists may and do exist as to the relative merits of gnathostatics, photostatics, various types of appliances, third molar pressure, continuous or intermittent pressure, gold versus chrome alloy, to mention only a few, and such discussions are well and good *within* the literature of orthodontics, our scientific sessions, and even between two orthodontists privately; but, when the third person, namely, the individual patient, enters into the picture, we must rely on our sense of professional ethics and our sense of fair play in the handling of any controversial situation.

Careless Remarks.—Careless remarks can do more harm and impair our standing with our fellow practitioners perhaps more than any other one fault. How often have we been overheard discussing that poor restoration or that poor appliance (always someone else's services, of course) with our assistant or someone else? How often have we in social gatherings been prone to belittle another orthodontist for his diagnosis and methods of treatment? How many times, not by direct word but by inference, has it been intimated that other orthodontists are not as capable as we? *It is unprofessional for any one of us to indicate in any way that any remedy, technique, method of treatment, or instrument is exclusive to himself, or to a group of which he is a member.* In a community in which there are several orthodontists, such remarks or similar careless remarks help no one, and least of all, the one who makes the remark. Incidentally, careless remarks can possibly lead to legal repercussions.

Let there be honest differences of opinion. As Voltaire has so aptly put it, "I disapprove of what you say, but I will defend to the death your right to say it," but there is a time and place for everything. Our purpose must be to elevate dentistry in general and orthodontics in particular.

Prospective Patients.—Let us review some incidents that can occur in our handling of prospective patients, because all of our patients are at one time or another prospective patients. I believe that we will agree that a large percentage of our patients are referred by our general practitioners—our brother dentists. How often have we been tempted to criticize the type of restorations we see; the lack of proper space retainers; the lack of judgment of the family dentist to have recognized the malocclusion much earlier; to condemn those dentists who do not practice children's dentistry; the poor full-mouth radiographs; and many other things which we all see routinely. But wait! We should not refer disparagingly to the services of another dentist in the presence of patients. Criticism of any of the services or lack of services rendered may be unjust because of our lack of knowledge of the conditions under which the services or directions were afforded. However, the welfare of the patient is paramount to every other consideration, and should be conserved to the utmost of our ability. If we find indisputable evidence that a patient is suffering from previous faulty treatment or diagnosis, it is our duty to institute correct treatment, *doing it with as little comment as possible,* and in such a manner as to avoid reflection on the patient's dentist and the profession. It often requires a great deal of tact and diplomacy, but it is our task to see that the patient is well advised and, at the same time, to see that the confidence of the patient in our profession is not disturbed.

Occasionally, incidents occur in all of our practices relative to when orthodontic treatment should be started. Many of these disagreements or discussions can be avoided by instilling confidence in the dentists that the orthodontist knows from experience when is the best time to begin treatments. Yet, occasionally some family dentist will protest vigorously about the orthodontist's decision. This situation, too, calls for tact and patience and perhaps a private conference with the family dentist explaining why the decision is as it is.

Perhaps the greatest obstacle the orthodontist has to overcome is that of some dentists believing and, in addition, telling the orthodontic patient's parents, "Orthodontics causes caries, resorption, and nonvital teeth," This is a matter of education as well as ethics involved.

Harmonious arrangements with all concerned are the rule, rather than the exception, today, but in obtaining these harmonious relations we must be tactful, diplomatic, and ethical.

Temporary Patients.—All orthodontists have temporary patients, especially do those of us who practice in or near resort areas and summer camps. Obviously, no orthodontist can create a successful practice from such clientele, but patients do visit their relatives during the summer months, they do attend summer camps, and they do take extended vacations.

It should be the policy of each orthodontist, when he can possibly do so, to cooperate under these circumstances. Temporary patients quite often just come by the office without any previous appointment. It should be our policy to accommodate them at our earliest possible convenience, because we all realize that probably our patients do likewise to some other orthodontist regardless of how well they have been instructed to call for appointments.

If you will pardon a personal reference, I recall several years ago when I received such a patient from another section of the country. Upon examining his mouth and appliances, I was appalled at what I saw—appliances of which I had never seen nor heard, and I just privately felt sorry for the poor patient. Fortunately for me, however, the patient stayed for several weeks in my community, thus giving me an opportunity to study the type of appliance and the method employed by the patient's orthodontist. I learned, incidentally, one valuable method of correcting a certain type of malocclusion, which I still use today, and, what is more important, I learned that I should not be too quick to criticize, even privately, what another orthodontist may be doing.

The following suggestion is a procedure which many orthodontists follow: when temporary patients are in our care, necessary repairs are made, but no major appliance changes are done. If we see the patient only once, no charge is made, but we carefully explain to the parents that no charge is made out of courtesy to their orthodontist.

Regardless of the type of appliance involved, regardless of the method of orthodontic treatment employed, we as ethical orthodontists must cooperate in the welfare of the patient and in building confidence and good will toward all orthodontists.

There is a certain percentage of patients who, immediately upon meeting a new orthodontist while away from home, will seek to ascertain if their orthodontist at home is treating the case correctly. If our answer cannot be an honest, outright "Yes," then we owe it to our profession to be extremely tactful. There are all types of people in the world. An orthodontist, sooner or later, meets up with most of them.

Occasionally, in one's own community, patients of another orthodontist will seek your aid while their orthodontist is sick or out of town. If an orthodontist is consulted in an emergency by the patient of another practitioner who is temporarily absent from his office, or by a patient who is away from home, the duty of the orthodontist so consulted is to relieve the patient of any immediate disability and then refer the patient back to his regular orthodontist. To urge or institute a different plan of treatment is unethical, except, however, in those instances in which it is manifest that a change has occurred, obviously not anticipated by the patient's regular orthodontist.

When an orthodontist is called in consultation by a fellow practitioner, he should hold the discussion in the consultation as confidential, and under no circumstances should he accept the case without the consent of the orthodontist who has been attending it, or until he has been assured that any differences concerning the patient's obligation to the previous orthodontist have been satisfactorily adjusted.

Transfer Patients.—Perhaps no phase of orthodontic treatment is more misunderstood by the patients' parents and the orthodontists than that of transfer patients. While there will probably never be an absolute rule for this procedure, the transferring of patients should be handled tactfully and ethically. For that reason I wish to discuss this subject from both sides, that of (a) outgoing transfer patients and (b) incoming transfer patients.

There are quite a number of important do's and don't's in handling patients who are moving to another community and will no longer be patients of yours. There are also many courtesies that we can extend the previous orthodontist and the transfer patients in accepting them:

1. When we are transferring a patient, how often have we told the patient's parents that Johnny is practically through with his orthodontic treatments?

2. How often have we definitely assured the parents that the new orthodontist will not change the appliances at all?

3. Have any of us been guilty of starting orthodontic cases knowing that we will be able to see them only a month or two?

4. Do we attempt to determine the new orthodontist's fees?

5. Do we transfer patients without adequate case records?

6. When we receive a transfer patient, how often have we commented unfavorably on the type of appliance present or the method of treatment employed?

These and many other questions could be asked. Obviously, the answers to these questions can be answered only by each orthodontist; but, let us stop and think—what if we were the receiving orthodontist and the patient came to us under adverse circumstances, such adverse circumstances created not by the patient but by the previous orthodontist?

1. In discussing Point 1, that of telling or inferring that this patient's treatments are practically finished, we should avoid telling this to the transfer patient. The next orthodontist may have other ideas and is entitled to handle the case as he sees fit. The vast majority of orthodontists are ethical men who will treat all concerned fairly. (In this respect, however, we all realize that some parents tell the new orthodontist that the previous orthodontist said "Johnny is almost through." All who have been in our specialty any length of time know that oftentimes this is a pyschological approach of the parents—and we must handle the situation as such.) A letter to the previous orthodontist advises him that this patient has called and made an appointment or has come into the office, and requesting him to send the necessary case records will nearly always reveal any special extenuating circumstances.

2. In discussing Point 2, that of assuring the parents that the new orthodontist will not need to change appliances; with the various methods and techniques of treating orthodontic cases, all of us occasionally receive transfer patients with appliances that we either do not favor or we do not know how to treat the patient adequately with this particular appliance. This is not in

condemnation of any type of treatment method used, but all of us much prefer to use the type of appliance that we feel can secure the best results in our hands.

Many orthodontists, including myself, use the following procedure, which seems to be fair for all concerned: when we receive a transfer patient with appliance we cannot adequately use for that particular case, we slowly change the appliance over to one that we can handle. In explanation to the parents we tell them, "Dr. Jones has done a fine service for your child and at this time it is necessary for us to change the appliances slightly due to the development of the case—I'm sure that Dr. Jones would do the same at this stage of Johnny's treatment." Incidentally, we make no new appliance charges for this service. The expense is not great, and the good will that the preceding orthodontist and the patient's parents feel more than compensates us for this service. This might well be called the ethics of economics. It is not only good business procedure but also is a tactful ethical manner of cooperation. It is unethical to attempt to diagnose any case when it is out of your hands and to attempt to force your diagnosis, thus creating embarrassing and unpleasant attitudes of the patient's parents toward the efforts of the next orthodontist.

3. In discussing Point 3, many cases have been started and within a short time unavoidable circumstances arise which necessitate the transferring of the case. Let's give our fellow practitioner the benefit of any doubt.

4. In discussing Point 4, that of attempting to determine the new orthodontist's fees, the only ethical answer is to tell the parents that you do not know what the new orthodontist will charge for his services, but that you are sure he will be fair in his business arrangements.

5. In discussing Point 5 in regard to transferring patients without adequate case records, we should always think of the patient's benefit. Included in orthodontic case records should be adequate models, radiographs, photographs, appliances, and a case history, including personal history and financial arrangements.

As a general rule, in receiving transfer patients, it is a good policy to maintain the same financial arrangements as made with the previous orthodontist. This is done out of courtesy to the preceding orthodontist—the parents already have their budget set up for this arrangement and good will toward the orthodontic profession is maintained.

6. In discussing Point 6, that of receiving transfer patients and criticizing the type of appliances or the method of treatment, if any of us should be guilty of condemnation, it is no way to win friends and influence people.

There is more than one accepted method in doing almost anything. Any attempt to indicate in any way that any remedy, technique, method of treatment, or instrument is exclusive to oneself, or to a group of which one is a member, is unprofessional and, therefore, unethical.

You will notice that I have not included in this discussion the ever-increasing problem of "Mail Order Orthodontics." No ethical or sensible orthodontist will be connected in any manner whatsoever with such tactics. I do wish to urge, however, that all of us realize that in the next few years this

problem of "Mail Order Orthodontics" may become more and more acute. One of the best articles relative to this subject was written by Dr. Charles R. Baker, *The Journal of the American Dental Association*, March, 1940. A review of this and similar articles might well be worth while.

Without discussion, it is obvious that certain procedures of kickbacks, tipping elevator girls, allowing unauthorized personnel to administer to patients, and indiscriminate dental notices seeking patients are unethical. Any practitioner guilty of such tactics is not discharging his own moral obligations; in addition, he is injuring the reputation of all his dental colleagues (not competitors) and the entire dental profession.

There have been but few instances indeed wherein financial returns have not kept pace with ethical practices. Tracing the course of relative conditions, a gradual increase in clientele must follow, with augmented prestige in the community and profession, fostering a sense of security, permanency, and assurance of continued support.

SUMMARY

In summarizing, let me present briefly some very important factors for all of us to consider.

1. Cooperate willingly with other orthodontists, general practitioners of dentistry, physicians, and surgeons for the utmost welfare of the patient.
2. Conduct ourselves both privately and publicly on a high plane.
3. Review our code of ethics periodically.
4. Do not make careless remarks.
5. Treat all patients under all circumstances as you would wish to be treated.
6. Refrain from unjust criticism of appliances, technique, and methods of treatment.
7. Extend all possible courtesy to temporary patients, making no charge for one visit. If the patient is to be with you several weeks or months, then it is permissible to charge for services.
8. In accepting transfer patients and it is necessary to change appliances, do so gradually and tactfully with no charge for changing the appliances. Keep the same financial arrangements as the previous orthodontist whenever possible. Above all else, do not criticize the previous orthodontist.
9. In transferring patients to another orthodontist, do not attempt to force your diagnosis; do not attempt to determine fees; send adequate case records; consult the orthodontic directory and assist the parents in selecting a new orthodontist.
10. Attend A.D.A., state, district, and local dental society meetings. It helps to keep a better spirit of cooperation and understanding between general practitioners of dentistry and the orthodontic profession. It goes without saying that we should attend the A.A.O. and our district orthodontic meetings. I also wish to urge that we read and study our professional publications—these editors and contributors deserve our thanks for doing a fine and necessary service.

CONCLUSION

I do not pretend to be an authority on the subject of ethics. Neither do I wish to imply that the subject has been fully covered in this thesis. I have, however, been encouraged to submit a thesis on this subject by many discussions with prominent leaders in the specialty of orthodontics who have felt for many years that we can improve our prestige and our services by improving our ethical standards. Orthodontic standards are not now low, but perfection is never reached until improvements are made. It is the moral responsibility of each one of us to make these improvements where necessary.

If I were asked to give a definition of ethics it would be, "Courtesy at its highest level."

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610 BOYLE BUILDING.

SOME MEDICAL ASPECTS OF BONE PHYSIOLOGY WHICH PERTAIN TO ORTHODONTICS

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THIS paper is designed to present a brief discussion of some of the systemic factors concerned with normal bone metabolism and of some of the derangements which may occur. Normal bone physiology is obviously a prime concern of the orthodontist. Nevertheless, clinical preoccupation with a specific disorder of the oral region, or in research undertaken to gain a better understanding of the unique problems of the field of dentistry, may result in overlooking mechanisms effective elsewhere in the body, which may influence the mouth and its structures.

Bone is primarily a complex of calcium, phosphorus, carbonate, and protein. Osteoblast and osteoclast cells continually destroy and replace adult bone at an equal rate. Recent evidence indicates that the osteoblast may not be a specially differentiated cell, but that any fibroblast may assume osteoblastic activity.

Various mechanisms apart from the osteoblast are concerned in the final production of well-calcified bone. An optimal supply of calcium, phosphorus, and of protein precursors must be assured. Glucose metabolism needs to be normal. Glucose is an important local substrate in the intermediary processes leading to bone deposition. Its presence is necessary for the normal functioning of the enzyme, alkaline phosphatase, elaborated by the active osteoblast. Moreover, the pH of the blood and the tissues and the hormonal environment of the organism also enter into the complicated picture of bone turnover and repair.

The ingestion and absorption of adequate amounts of calcium and phosphorus and of protein or protein precursors, along with adequate calories, are an obvious first essential for bone health (Table I).

There is a daily catabolism of these materials which continues at an irreducible minimum. This loss must be replaced by nutritional effort. If not, starvation ensues. With this, the process of bone catabolism exceeds that of anabolism. There is ultimately osetoporosis and wasting of bone as well as wasting of other tissues. In the depleted subject, tissue and bone healing may be severely retarded. Growth in the young may be similarly restricted, or even arrested. Osteoporosis becomes discernible on x-ray examination, when about one-third of the normal calcium content of the bone has been lost.

Under ordinary circumstances, the diet of the average individual is adequate. Proper absorptive mechanisms in the gut then become important

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(Table I). Chronic derangements of these readily lead to inanition, bone atrophy, and osteoporosis. Simple lack of calcium and protein probably explains some of these effects, but other disturbed functions are involved. Chronic obstructions to the upper gastrointestinal tract readily block nutrition, as the result both of anorexia and of vomiting. Chronic diarrhea also interferes with food absorption, as a consequence of the rapid transit time of the intestinal content. Moreover, in the diarrheas associated with deficient fat ingestion, such as nontropical sprue, with its enzyme deficiencies, calcium is lost in the stool as a calcium soap of the unabsorbed fatty acids.

TABLE I. FACTORS IN BONE HEALTH AND DISEASE

I. Problems of food ingestion
II. Problems of food absorption
  A. Upper gastrointestinal tract obstruction and vomiting
  B. Diarrhea
  C. Biliary fistula
III. Problems of acid base balance
  A. Chronic nephritis
  B. Diabetes mellitus with acidosis
  C. Chronic diarrhea with base loss
  D. Chronic ingestion of acid-forming salts
IV. Problems of hormonal control
  A. Anterior pituitary
  B. Adrenal cortex
    1. Protein and carbohydrate effects
    2. Androgen effects
  C. Gonads
    1. Testosterone—growth and protein anabolism
    2. Estrogens—calcium deposition
  D. Pancreas—insulin
  E. Thyroid
    1. Protein catabolism and osteoporosis
    2. Growth and anabolism
  F. Parathyroids
V. Problems of intermediary metabolism of bone—alkaline phosphatase, local pH, and salt concentrations
VI. Intrinsic lesions of bone
  A. Senile osteoporosis
  B. Fragilitas ossium
  C. Metastatic lesions and primary sarcoma
  D. Multiple myeloma
  E. Paget's disease

A third mechanism resulting in improper absorption of calcium and phosphorus from the gut is lack of vitamin D in the diet. This vitamin is necessary for their proper absorption. Lack of vitamin D rarely occurs in the adult as a consequence of a deficient diet. However, when the diet does lack this substance, the startling syndrome of osteomalacia, i.e., adult rickets, results. Vitamin D deficiency from dietary sources is rare but the vitamin D deficiency state is not too uncommon. Chronic diarrhea induces lack of absorption of the vitamin both from rapid passage through the gut and from loss in unabsorbed fat, in which the vitamin is soluble. The latter is especially true in the sprue syndromes and in the presence of a chronic biliary fistula. Vitamin D is similarly lost dissolved in mineral oil taken too soon after meals.

The ingestion and absorption of adequate amounts of the major constituents of bone do not insure that bone metabolism will be normal. Other influences then become concerned. For example, the mechanisms for the anabolism and catabolism of protein must be undisturbed.

Diabetes mellitus is a disorder of carbohydrate metabolism. It carries with it drastic consequences in terms of altered protein and fat metabolism. Thus, protein tissues are broken down in excess in an effort to maintain gluconeogenesis. The protein matrix of bone participates in this catabolic process. Calcium and phosphorus are dumped as a consequence. The increased combustion of fat, which also occurs in diabetes, ultimately causes ketosis and acidosis. Acidosis (Table I) results in the mobilization of calcium from the bones. Finally, poor tissue health as a consequence of the diabetes predisposes to infection. Local infection in the gums may readily cause dissolution of the neighboring bone.

The importance to calcium metabolism of pH of the blood and locally in the tissues is clear. Changes toward the acid side, i.e., acidosis, result in calcium mobilization from the bones, while undue alkalinity, alkalosis, tends to deposit calcium in the bones. The persistent withdrawal of calcium from the bones as a consequence of chronic acidosis may produce osteoporosis, even though a normal calcium intake is maintained.

The causes for chronic acidosis are few, but major (Table I). Renal disease is one such cause. This disorder results in failure to excrete normal acid metabolites, primarily sulfates and phosphates, from protein catabolism. There is also a failure of the renal function of substitution of ammonia for sodium and potassium, with consequent inability to spare base to the body. Osteoporosis may result from failure to relieve these disorders early in their course.

Unregulated diabetes mellitus, as mentioned, is a second cause of acidosis. Chronic diarrhea is a third cause due to loss of fixed base in the alkaline intestinal secretion. Rarely, the chronic ingestion of acid-forming salts, such as ammonium chloride or a ketogenic high fat diet, disturbs acid base balance.

The secretions of the endocrine glands also are of prime importance in bone metabolism (Table I, Part IV). Their effects are direct and indirect. Growth and its disturbances depend in part on the anterior pituitary. Carbohydrate, protein, and fat metabolism are essentially regulated by the endocrine glands, with the indirect effects on bone already discussed. The parathyroid glands regulate the level of blood ionizable calcium, and hence the movement of calcium and phosphate in and out of the bones to maintain this level constant.

A proper discussion of the glandular system should include a discussion of this system's own intrinsic regulatory mechanisms. This involves a survey of anterior pituitary physiology, because of this gland's function of control over the secretory activity of the other glands of internal secretion. For example, the adrenal cortex is stimulated to secrete its steroid hormones by anterior hypophyseal adrenocorticotropin (ACTH). The increased output of adrenal steroids serves in turn to depress the secretion of ACTH. This depression soon reduces adrenal activity, with less output of steroids, and so on. This system

of hormonal balances and checks is operative for the glands other than the adrenal which are under pituitary regulation, the gonads, thyroid, and possibly parathyroids and pancreas. To complicate matters, the secretion of one gland of internal secretion may influence the secretory activity of another, and alter the peripheral effects of that gland's hormone as well. Thus, hormonal therapy may serve to upset the normal equilibrium of the entire system, with repercussions far removed from the immediately desired purpose for which the therapy was given.

The secretions of the several endocrine glands all have effects upon calcium and bone metabolism. The role of the adrenal cortical steroids has been touched on previously in this paper. Cushing's syndrome is a disorder resulting from excessive cortical secretion, with the elaboration of steroids, among which are some similar to, if not identical with, cortisone. The effects of this steroid excess are primarily on protein catabolism. A negative nitrogen balance and a reduced carbohydrate tolerance are found in association with a sharp negative calcium balance. The levels of calcium, phosphorus, and of alkaline phosphatase in the serum remain normal as progressive osteoporosis becomes apparent.

The other changes of this disorder on sodium and potassium are equally significant but do not relate to this presentation.

The gonadal steroids, also elaborated under the influence of the anterior pituitary, also affect bone structure. Testosterone, the internal secretion of the testis, is a strong protein anabolic agent. It is responsible for the growth spurt of the puberal boy. The increase in muscle size and strength induced by this hormone is associated with a heavier bony skeleton. It is not clear whether this is simply a skeletal response to increased stress or is a direct effect of the hormone. Androgens other than testosterone are found in men and women. They result from the metabolism of as yet incompletely identified adrenal steroids. A pathologic amount of the latter is occasionally found in girls and women, with serious masculinizing effects.

The estrogens, secreted by the maturing ovarian follicle, induce excessive deposition of calcium in the bones of experimental animals treated with a large and prolonged dosage. The bones may simulate in density the so-called "marble bone" disease of children. In the pigeon, the serum calcium level may be elevated by estrogen administration. In man, it is uncertain as to whether estrogen excess affects the serum calcium level and whether estrogen lack accounts for the severe osteoporosis which may occur in women at the time of the menopause. Osteoporosis is commonly found in older people of both sexes. Many believe the menopausal disturbance to be simply an early manifestation of the senile disorder. In either case, treatment is of little avail. The studies of Albright and his co-workers have revealed a slightly negative calcium balance in these patients. This is reversed only suggestively by vigorous therapy with estrogens and testosterone. Interestingly, Shorr has found that strontium may substitute for calcium and thus increase the total deposition of salts in the bony matrix, in the treatment of this disorder.

The thyroid gland is equally of interest in bone physiology. The phenomena of growth inhibition and of delayed tooth eruption in cretinism and hypothyroidism are well known and need not be discussed in detail. Also, the effects of these disorders in lowering the rate of metabolic activity of all cells in the body are equally familiar. However, the fact that hyperthyroidism may result in osteoporosis, to the extent of pathologic fracture, is not so well realized. Interestingly, renal clearance of blood calcium keeps pace with this calcium mobilization. The blood calcium thus remains normal except rarely with renal disease and hyperthyroidism. The serum alkaline phosphatase may become elevated as bone repair is attempted by the osteoblasts.

The physiology of the parathyroid glands is too well known to require discussion here. Hypoparathyroidism leads to a fall in serum ionizable calcium, with a series of pathologic consequences, including tetany, when levels of 6 mg. per cent, or less, of total serum calcium are present. Hyperparathyroidism results in serum calcium levels well above the normal upper limit of 11 mg. per cent. This excess calcium obviously comes from mobilization from the bones and explains the severe osteoporosis and generalized bone cysts (osteitis fibrosa cystica) of this disorder. The high serum calcium results in ectopic soft tissue calcification, frequently with renal damage. Elevated serum alkaline phosphatase levels result as a consequence of compensatory efforts to replace bone.

This discussion outlines some of the physiologic mechanisms affecting bone health and repair. Some of the disturbances of these functions have been touched upon. The problems of intermediary metabolism in bone and of factors having to do with conditions determining lime salt deposition and matrix formation are too broad for discussion here and are mentioned for completeness (Table I, Part V). Finally, certain other diseases of bone remain whose pathologic mechanisms have not as yet been explained (Table III, Part VI). These include senile osteoporosis discussed herein, Paget's disease, and neoplasms of bone, primary and metastatic. They, too, enter the field of interest of the orthodontist and dentist through involvement of the bony structures of the oral region. Suspicion of any such abnormality should lead to a careful work-up by the internist.

EVOLUTION OF THE UNIVERSAL APPLIANCE

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IN 1928, when Dr. Spencer R. Atkinson first presented his universal bracket, which combined the advantages of the two Angle appliances that were enjoying popularity at the time, namely, the ribbon arch and the edgewise arch, the outstanding personality of the man who was dean of the Angle School was evidenced.

This important and ingenious innovation was accepted with approval by only a part of the orthodontic profession, and when later he presented in San Francisco his new technique based on his anatomical studies, as well as his knowledge of appliance therapy,[1] the number of his followers began to multiply. Annual seminars were established at the University of Southern California, and when this technique was included in the orthodontic courses in the university, orthodontists became convinced that a new technique had been created.

Not many years passed before they started to discuss and to write about Atkinson's philosophy and Atkinson's technique, but through modesty Atkinson did not allow the technique to bear his name, nor did he permit his name to be connected with any instrument or attachments associated with it, notwithstanding that he had contributed in the perfection of certain orthodontic instruments, but he has tacitly consented to have them bear the name of other inventors, for example, the McClinton plier.[2]

The different attachments elaborated in many years of experimentation and perfection at a great expense are known simply as "universal appliance."

Those of us who know the great Pasadena master intimately know that his ideas, as well as his appliance therapy, undergo constant changes. An appliance invented and perfected by him previously after multiple experiments, at times very laboriously, he would calmly consider antiquated today. For example, the universal bracket has undergone four modifications in the last few years, without having lost, of course, its essential characteristics.

The universal bracket employed today seems to us ideal because of its high degree of perfection, not only from the standpoint of its double action, but also because of its reduced size and ingenious construction (Fig. 1). Nevertheless, Atkinson's restless spirit is not content with his previous accomplishments. In the constant search for perfection he finds new horizons, each one broader than before. From this arises the belief that Dr. Atkinson is constantly changing. It appears that he takes pride in these constant "changes," which he continually makes in his appliance therapy, but he always preserves the fundamental idea and the basic principles of his well-established universal technique.

From the National University of Mexico.

"Always keep green"—"Always keep young" is the philosophy of Dr. Atkinson. This is based on the legend of the old Indian chief a survivor of an Indian tribe. He imbued him with the teachings to observe nature which Dr. Atkinson always follows with a religious fidelity. The wise man, says the old Indian, must keep himself "green" like a plant, and when he begins to turn yellow it is a sign of decadence. He must beware of human vanity in order not to feel too pompous, like the fruit which commences to ripen, so as not to feel complacent with what has been accomplished. To us this is the essence of Atkinson's grandeur.

With this preliminary introduction, one will understand better Dr. Atkinson's modest attitude and his desire constantly to advance in his scientific investigations in the field of orthodontics.

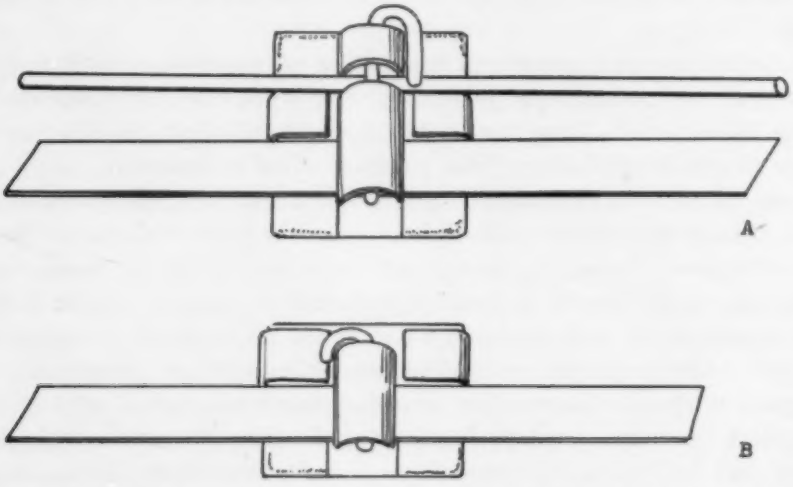


Fig. 1.—*A*, Universal bracket of double action employing 0.010 inch round gingival and 0.010 inch by 0.028 inch flat incisal wires.
***B*, New bracket eliminating gingival slot.**

As a result of his long research, orthodontists awaited with great interest the release of his findings to give them a clear and complete orientation on a scientific basis, from the biological as well as the mechanical viewpoint. Many are patiently awaiting the promised book of Atkinson's complete technique, in the United States as well as in the Latin-American countries. This is particularly true in Europe, where, since the last war, they have been deprived of American techniques for so many years. They will undoubtedly have the obvious professional curiosity to learn more about the extensive studies which Atkinson has achieved.

It is quite true that various articles have already been released, but only partially on the philosophy as well as the technique of Atkinson, by various authors.[3-7]

All these papers published on various occasions, however treated only certain aspects of Atkinson's work.

Atkinson is the one who must share the blame for his works not having become more universally known. This includes his anatomical-osteological re-

searches based on his vast private collection of skulls (perhaps the most valuable in the world) which comprises all races, ages, and types of malformation which he has studied with his characteristic analytical sense. He utilized the most valuable of these findings for the benefit of the practice of orthodontics.

The books which Atkinson is preparing and which should have seen the light of day many years ago for the benefit of orthodontic science have not yet been completed because of the strict scrupulousness of the author and of the constant modification which his attachments and appliances undergo, to which we have already referred.

The scientific integrity of this avid researcher is the reason his incomplete works have not been published, in spite of the vast material he has accumulated and which is splendidly and profusely illustrated. It is true that Atkinson has already published many articles as the partial result of his research, among them:

The Strategy of Orthodontic Treatment, Dental Cosmos **24**: 560-574, 1937.
Some Anatomic Factors Guiding Treatment Therapy, Am. J. Orthodontics and Oral Surg. **28**: 704-720, 1942.
The Permanent Maxillary Lateral Incisor, Am. J. Orthodontics and Oral Surg. **29**: 685-698, 1943.

We have high hopes that very soon he will complete and publish his previous efforts because we know that he is working day and night, preparing his generous contributions to dentistry, and particularly to orthodontics, a monumental work, the result of long years of laboratory research and clinical experience.

APPLIANCES

At the annual convention of the American Association of Orthodontists held in Columbus, Ohio, I had the opportunity of presenting a table clinic on the "Evolution of the Universal Technique," demonstrating different types of appliances on models.

This paper is the result of that clinic and offers a demonstration of the different steps and modifications which Atkinson's earliest appliance has undergone.

The purpose of the drawings, made in Mexico,* is to present graphically the appliances which we employ in our daily practice, some of them showing step by step how they were constructed and employed.

Needless to say, it is not easy to realize this objective by means of illustrations, and the author had greater facility in demonstrating the principles in his table clinic at the aforementioned Columbus meeting, presenting them on successive models.

As the title indicates, we will herein confine ourselves to presenting various aspects of the appliance therapy and the innovations employed by Dr. Atkinson himself in his private office in Pasadena, as well as to the modifications and contributions of some of his pupils and followers, almost all of which are used in my office of Mexico.

*I must gratefully acknowledge the aid given me in the executed drawings by Mr. L. G. Saldaña, draftsman of the National Museum of Mexico.
I wish also to express my appreciation to Dr. Sidney Riesner, of New York, for his assistance in the preparation of this article.

It is proper to explain that in this technique there is no standard type that can be applied in all cases. The exigencies of each individual case will decide when a certain appliance is to be used, as well as which separate part or combination of adjuncts may be employed.

The variety of combinations which the orthodontist has at his disposal with the universal technique are many, and their proper selection will depend on the operator's good judgment.

Chrome Alloy.—In the construction of our appliance stainless steel is still the preferred metal because of its multiple qualities already well recognized. When Dr. Brooks Bell visited Mexico in 1935, he stated correctly that from the psychological viewpoint "chrome alloy" sounds better to our patients than stainless steel. The bands, arches, and appliances are of chrome alloy. Union of the free ends of the bands and brackets is done by spot welding, in a simple, rapid, and economic manner. The success achieved by the Johnson technique is due in great measure to the application of the twin arch, made of chrome alloy. Stainless steel is also now used in the technique of the edgewise mechanism.

Fig. 2.

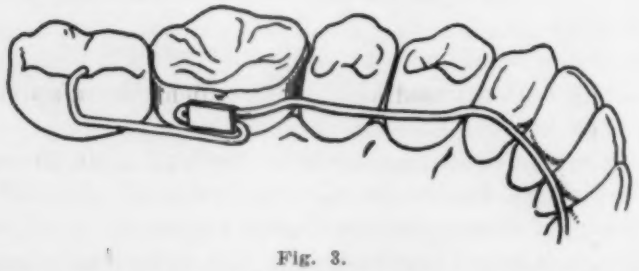


Fig. 3.

Fig. 2.—Upper lingual arch with a distal stabilizing extension to the second molar, 0.036 inch round wire.

Fig. 3.—Lower lingual arch, 0.036 inch, extended to the second molar with an occlusal rest.

Lingual arches have undergone certain changes. The diameter of the arch we employ at the present time is a little greater so as to give it more stability. It is 0.036 inch instead of the 0.030 inch we formerly used. The lingual sheath for the reception of the arch has been modified by Atkinson in an ingenious manner. It offers greater resistance and lends itself better for soldering (Figs. 2, 3, and 8, *A*). In order to secure lateral expansion, the lingual arch is divided into two parts, cutting it in the center and joining the two parts of the arch by means of a segment of tubing 0.040 inch in diameter (Fig. 4).

In order to secure unilateral or bilateral expansion a coil spring is placed in the lingual arch on either one or both sides, respectively, as the case may require. In order to prevent the spring from becoming dislodged, a heading is soldered on (Fig. 5). Care must be exercised that no pressure is exerted on

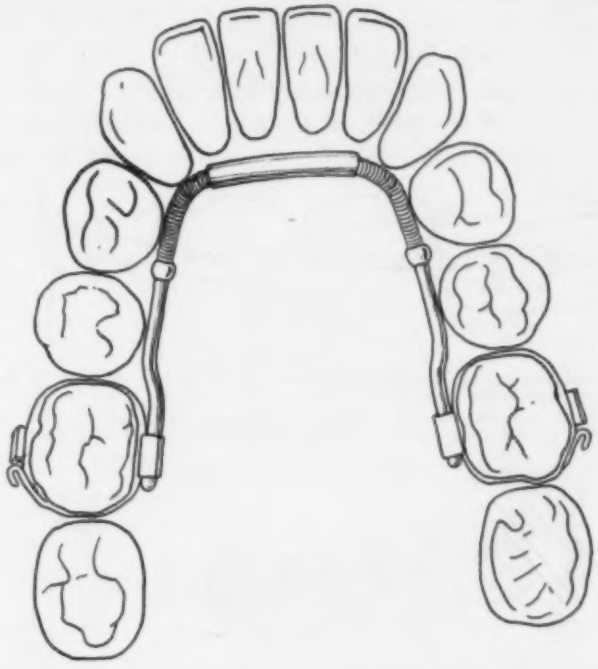


Fig. 4.—Split lingual expansion arch, 0.036 inch with tubular sleeve activated by coil springs. Where indicated may be employed unilaterally.

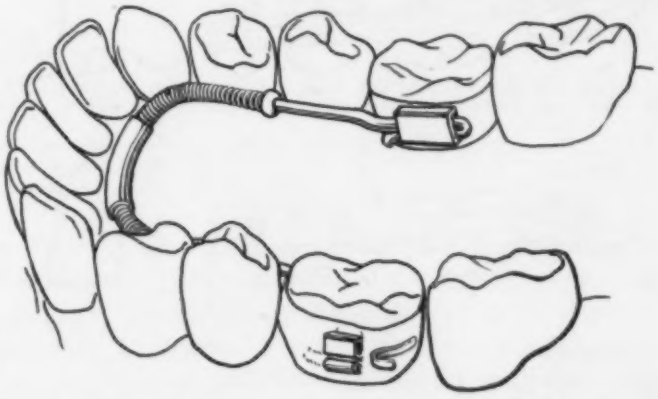


Fig. 5.—Horizontal seating of the lingual arch with recurved loop.

the anterior teeth. This refers to upper lingual arches as well as lower, since, recalling the studies of Tweed[8] and Margolis[9] in regard to the position of the lower teeth, we know that these teeth have a tendency to drift forward which causes them to lose stability within the bony base. Tweed stated that prac-

tically all malocclusions are characterized by the forward drifting of the teeth with relation to the basal bone, and that almost all the cases of Class I malocclusion present the beginning of bimaxillary protrusion.

The lingual expansion arch is of particular value in mixed dentitions.

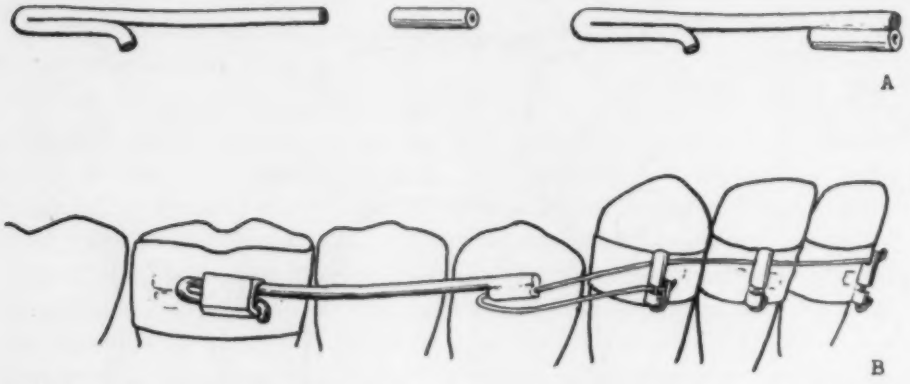


Fig. 6.—*A*, Construction of "perforated road" arch wire. A tube is soldered gingivally to a buccal sectional arch of 0.036 inch round wire.

B, An 0.010 inch round wire is fitted to engage the incisal slot labially and carried gingivally through the perforated road to anchor in the gingival slot of the canine.

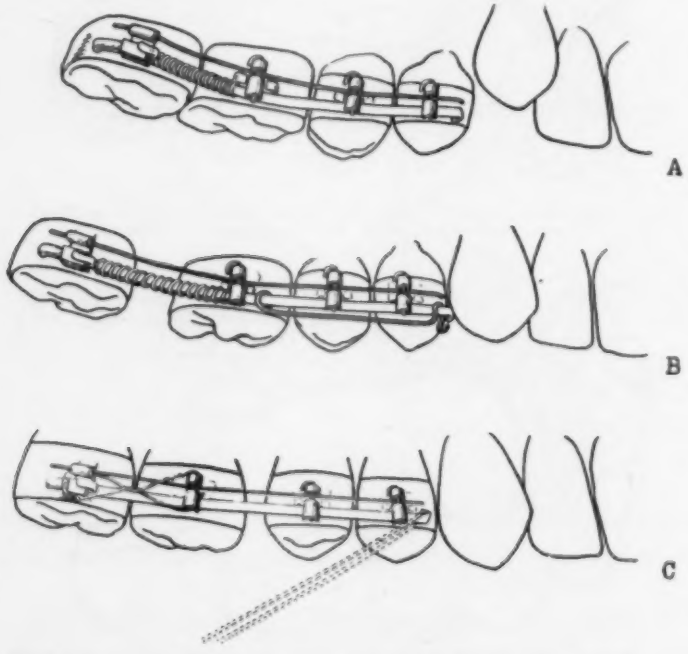


Fig. 7.—*A*, Distal movement of the second molar by coil spring action.

B, Distal movement of the first molar by sliding jig and elastic force.

C, Reciprocal reinforcement of molars and distal movement of premolars by direct action of intermaxillary elastics.

In regard to the use of bands, we must make a statement that we consider pertinent. In Atkinson's technique the placing of bands on all front and back teeth, upper and lower, is not indispensable. There is a tendency to reduce the number of bands (Fig. 6, *A* and *B*). But in the permanent dentition and when

it is a question of finishing treatment, bands are placed on all the teeth, including the second molars, upper as well as lower, as will be discussed later.

We construct bands on second molars provided they are sufficiently erupted, and in those cases we do not employ the lingual arch.

According to Erikson,[3] simultaneous distal movement requires placing bands on all the teeth, including the second molars, so as to have individual anchorage on all the teeth, and by means of a coil spring inserted between the molars, space is provided to move the back teeth distally. Later the spring is passed between the first molar and the second premolar, and so on in succession.

In constructing the bands for a sectional arch a bracket is made for the first molars and only the second molar has a buccal sheath (Fig. 7, *A*, *B*, and *C*).

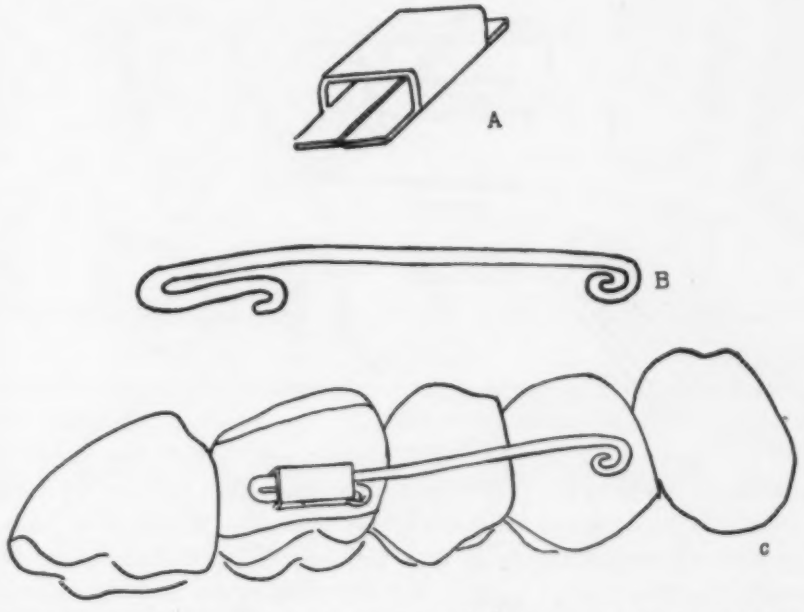


Fig. 8.—Buccal road wire, 0.036 inch. Note the lingual sheath used on the buccal side to fit the buccal road. A buccal sectional arch for accommodation for both intermaxillary and labial traction elastics.

A, Lingual type sheath to seat 0.036 inch round wire buccally.

B, Buccal sectional arch.

C, Sectional arch in place.

To reduce the number of bands employed a modification has been made, consisting of the segment (Fig. 8), made of 0.036 inch round wire. This serves for the application of intermaxillary force as well as to exert pressure on the front teeth when they protrude. For this only two bands are required on the upper first molars and two on the lower first molars, with their respective lingual arches (Fig. 9). On the labial side of the upper bands are soldered lingual sheaths, 0.036 inch in diameter, into which the labial segments are inserted. The sheaths are of the same diameter as those used for the lingual arches (Fig. 8, *A*).

The elastics used are preferably made of rubber dam, following the teachings of Dr. Albin Oppenheim, who until his death maintained the principle of

the application of delicate forces in orthodontic therapy. These elastics have two qualities: they are transparent and produce gentle pressure.

This effect is of great appeal to children, but is even more valuable to adults. We cannot place bands on adult's front teeth as we can on children's because the social life of adults does not always permit them to wear such bands. We therefore recommend for daytime the use of transparent rubber dam elastics which produces pressure on protruding front teeth, introducing horizontal traction from canine to canine. And at night regular intermaxillary rubber elastics are used, No. 5 or No. 6, which extend from the most forward upper labial segment to the first lower molar on each side.

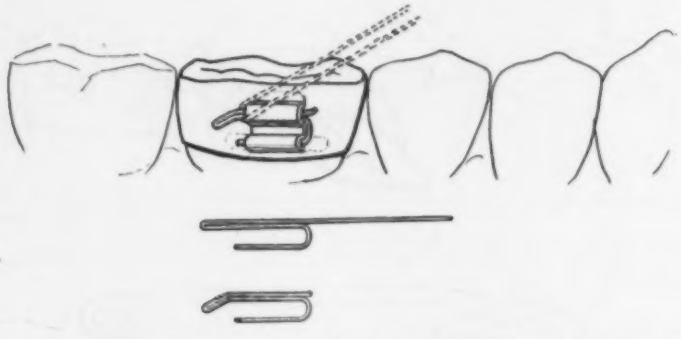


Fig. 9.—Construction of intermaxillary hook of 0.015 inch round wire, bent after insertion in buccal sheath.

Extraction.—We also present other appliances which are effective in those cases where extraction has been indicated. In principle, this procedure probably will not meet with Dr. Atkinson's approval, but in the daily practice of orthodontics in Mexico we very frequently find cases of double protrusion of racial origin, which occasionally are very marked. While it is true that it is only for esthetic appearances, it is a well-known fact that, in correcting this undesirable feature, a large part of our clientele comes seeking attention. They request the elimination of psychoses that have come about through the unpleasant appearance of their children.

In these cases we frankly find no other solution than sacrificing the four first premolars. This is more than compensated for by the satisfactory results, both from the esthetic and from the psychological viewpoint.

We have also noted with satisfaction that in these cases the eruption of the third molars occurs sooner than is customary—at 17 years and without difficulties. This does not occur in other cases where extractions have not been performed.

While mentioning the extraction of the first premolars, we believe it proper to make a brief comment on the recent publication of Dr. Nance. "The Extraction of Second Premolars."[10]

We have a high regard for the interesting studies and publications Nance has made for many years but, in recommending the extraction of the second premolars, it seems to us opportune to emphasize an anatomical fact. It is well known that the first premolar has two roots and the second, one root, and it

will be seen that it is not convenient to move the first premolar which has two roots to a space occupied by a single root. If we would follow Nance's teachings, and when this tooth is moved distally, it will be possible to see and feel that the buccal root protrudes from the alveolus, thus subjecting the root, as well as the gum, to a constant irritation. This results in endangering the stability of the tooth that it is desirable to preserve.

No doubt there will be cases in which extraction of the second premolar is indicated, for example, in the mandible and also in the maxilla, when the first premolar has only one root or when the latter is of a smaller size than normal.

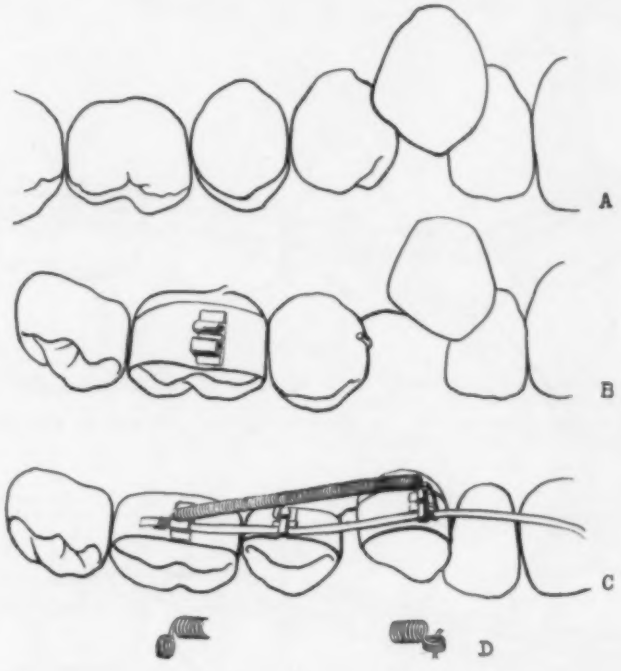


Fig. 10.—*A*, Blocked-out canine.
B, Segment with first premolar extracted. Notice extension arm of lingual arch maintaining stability of second premolar.
C, 0.030 inch coil spring attached to retract cuspid bodily, guided by incisal arch.
D, Notice the ends of the coil spring.

The Coil Spring.—For the purpose of reducing the space created by the extraction, we utilize a coil spring that has a continuous, slow, and effective function, since it does not depend on the uncertain cooperation of the patient. The spring is attached to the canine and first or second molars.

The size of the spring is correspondingly reduced as the distance between the canine and the second premolar shortens. The spring may be placed in the gingival or incisal slot, according to the inclination of the canine which is moved bodily. It is guided either by a segment of flat wire 0.010 inch by 0.028 inch, or a complete flat arch wire, or, better still, by an 0.015 inch round arch (Fig. 10).

Fig. 11.—Contraction coil spring in a continuous arch of 0.008 inch round wire.

Fig. 12.

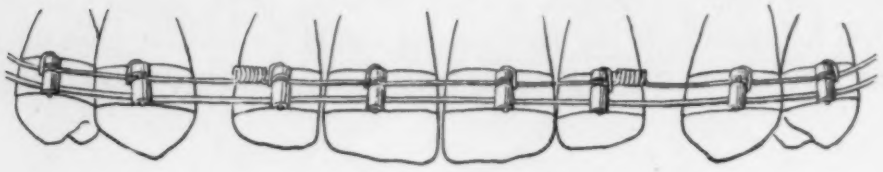
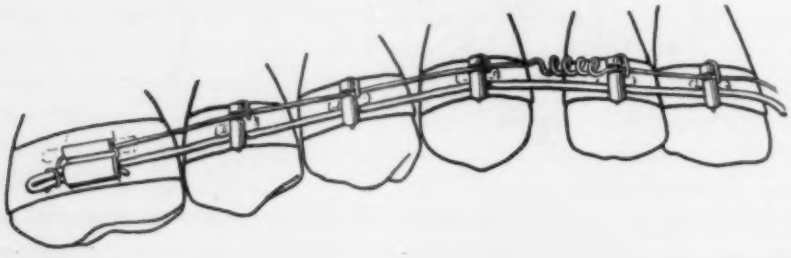


Fig. 13.

Fig. 12.—The integrated coil spring arch in place in the gingival slot to retract the anterior section and to close individual spaces.

Fig. 13.—The buccal view of Fig. 12 illustrating the free end of the gingival arch before anchoring to the round 0.015 inch incisal wire as seen in Fig. 14.

Fig. 14.



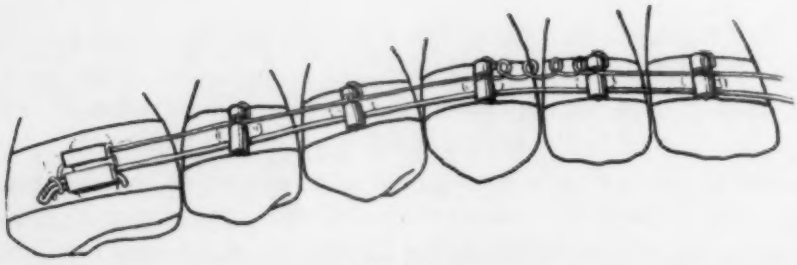


Fig. 15.

Fig. 14.—Activated gingival arch looped to recurved terminal of incisal arch.
Fig. 15.—All spaces closed through action of gingival coil arch.

Contraction Coil Spring Arch.—The spaces that form between the four front teeth when the canine is brought back to fill the space of the extracted first premolar are easily reduced by means of a continuously functioning coil spring arch, originally recommended by Nagamoto.[11]

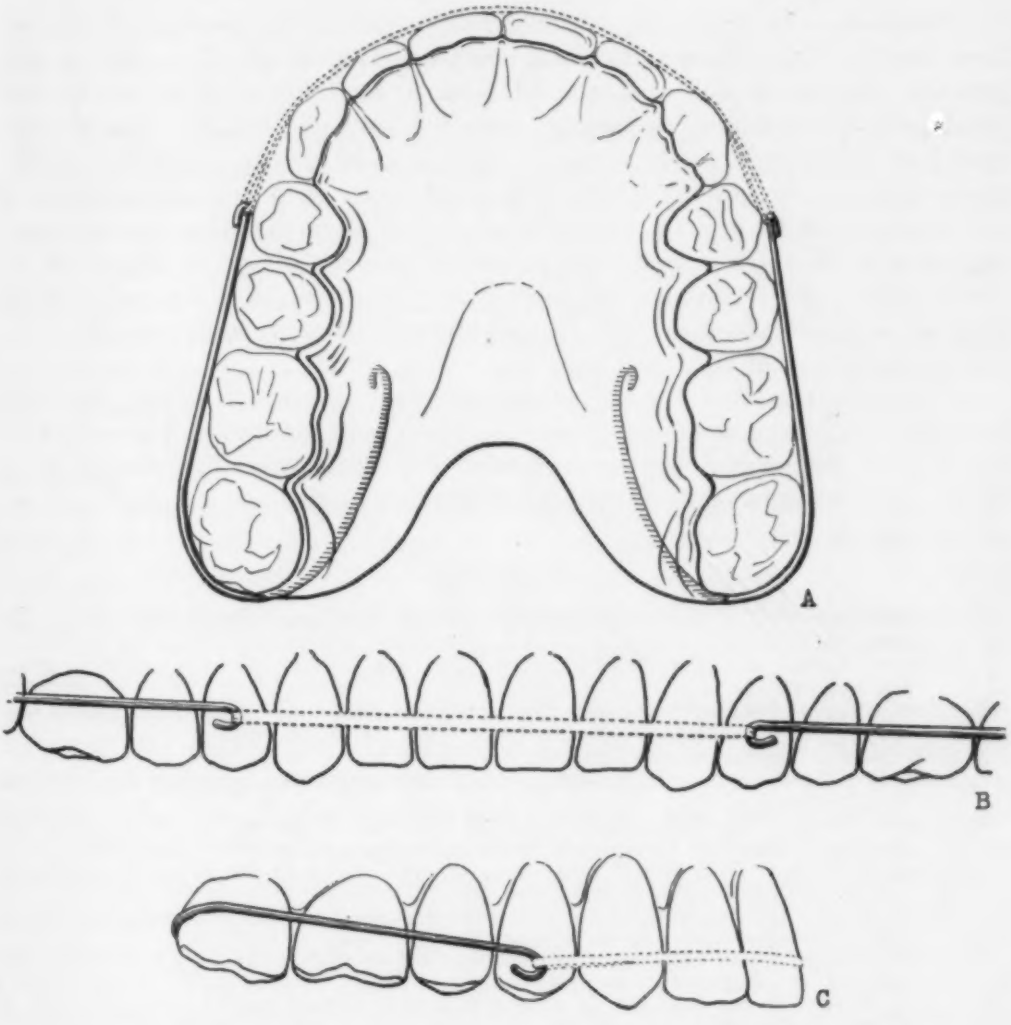


Fig. 16.—*A*, Occlusal view of acrylic retainer with buccal arm extensions of 0.036 inch round wire accommodating rubber dam elastics for anterior segment.
B, Anterior view.
C, Buccal view.

This arch with coil spring is constructed of untempered wire, 0.008 inch in diameter (Fig. 11). The ends are detempered by means of a match flame. These later serve to tighten the arch when turned gingivally, once the springs are removed. This operation is performed every three to four weeks until the spaces are completely closed. The springs made within the gingival slit are easily and simply constructed. The illustrations in Figs. 12, 13, 14, and 15 show quite clearly the function of the aforementioned arch with a continuous spring.

This arch may have one or two springs, depending on whether one desires to close the spaces on one or both sides. We employ it in our practice very satisfactorily. It can also be used for correcting the midline; one tooth after the other is moved strategically and separately. I can assure my readers that they will find this appliance very useful in their daily orthodontic practice.

Retainers.—In conclusion, I should like to include the retainers which we have used for many years to our own great satisfaction, as well as that of our patients, children as well as adults. I refer to retainers made of acrylic, the front part of which derives pressure from rubber dam elastics. This is very useful in finishing Class II cases as well as cases of extraction, where the spaces close up very satisfactorily. The arms which project from the retainer, and which serve for attaching the elastics, extend from the back forward, coming out at the distal part of the first or second molars as shown in Fig. 16, *A*, *B*, and *C*, these arms being made of 0.036 inch round wire. The lingual gingival margins of the acrylic plate may be progressively trimmed to accommodate the lingual movement of the labial segment.

These ideas, as well as many others, owe their inspiration to Dr. Atkinson, and the latex elastic originates from the principle introduced and preached by the late Dr. Oppenheim who stamped them out from rubber dam slots himself with a hammer and die. These are easily fabricated today and supplied by firms specializing in this line.

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MADERO 40.

THIRD MOLAR CONSIDERATIONS

MEYER EGGNATZ, D.D.S., BALTIMORE, MD.

THE third molar becomes an object for consideration by the dentist from the time that the tooth bud is laid down. It remains a problem until such time as a decision can be made as to the possibilities of its normal eruption or the necessity for its removal becomes apparent and the operation is completed.

Evolutionary changes through the years and modern masticatory and dietary habits seem to be creating a smaller arch form, particularly in the mandible. The last of the teeth to calcify, the third molars, as a result find insufficient space to accommodate them as they erupt. The over-all size of the third molars has not decreased in ratio to the seemingly decreasing tendency in the size of the arch, and this fact has much to do with their failure to erupt normally in all too many instances.

The apparent evolutionary trend toward a lack of sufficient growth and development of the skeletal structures to accommodate a full complement of teeth without irregularity and malocclusion is always before us.[1] The third molar becomes what is usually termed "impacted," due to lack of space in the arch for its normal eruption, and appears to create a form of compression or displacing pressure throughout the entire dental arch.

Broadbent,[2] in his studies of tooth development, tooth eruption, and jaw form and size, made use of cephalometric radiographs, which means placing the head of the growing individual in a special head holder which will permit exact repetition of the position of the head to the tube and film, at quarterly and semi-annual intervals. By this means he studied the growth of the teeth in relation to the development of the face and found that about the time the crowns of the third molars are completely formed, Nature's plan in the full develpoment of the sketetal structures fails to provide sufficient space for the eruption of the third molars. This lack of growth and development also fails to provide enough room for the incisor teeth, particularly the mandibular incisors, to maintain the normal line of occlusion. Broadbent concluded that any buckling of the lower dental arch at this stage cannot be attributed to pressure from the erupting third molar teeth, but rather the third molars, along with the incisors, are victims of a failure of the skeletal structure to develop to proper size and proportion. This report is an interesting and excellent one. However, as to whether lack of space caused impaction of the third molar, or the impacted third molar, in its effort to erupt, contributed to the buckling of the arch, the fact remains that all too frequently the full natural denture cannot adjust itself to the jaw size and crowding and malocclusion result.

Presented at the meeting of the Baltimore City Dental Society, March 13, 1950, as part of a symposium on dentistry for children.

Early examination by extraoral films and follow-up x-ray films at reasonable intervals, each 6 months for example, will go a long way in arriving at a conclusion as to the possibilities in eruption of the third molars. Comparison of a series of films of the same patient permits a clear picture to form as to whether

A.

B.

Fig. 1.—*A* and *B*, Showing greater mesiodistal width of upper molar than bony area of tuberosity, indicating displacement or noneruption.

a condition is getting better or worse. In a round-table discussion at a recent orthodontic meeting, certain opinions relative to third molars were expressed: (1) in less than half of the normal nonorthodontic mouths will sufficient room

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 2.—Upper molar lacking bony area for normal eruption. Lower molar showing occlusal surface; an indication of future trouble, the occlusal surface should not be seen in a normally upright tooth.

Figs. 3 and 4.—Showing sufficient bony area for eruption of upper third molars.

develop to allow eruption of the third molars; (2) in patients requiring orthodontic attention, the chances of having room for the third molars are reduced and it is desirable to have the third molars removed as early as possible after determining that normal eruption cannot take place; (3) it was the consensus of opinion that a real contribution to dentistry could be made if a series of jaw plates were taken and evaluated to establish a table showing the space between the distal surface of the lower second molar and the anterior border of the ascending ramus, necessary at a given age, if normal eruption is to take place. The general dentist and the orthodontist could be reasonably sure of their diagnosis and could plan treatment which would include the proper disposition of the third molar. The orthodontist is particularly interested in Conclusions 2 and 3, so as to safeguard the result of orthodontic treatment. The general dentist is especially interested in Conclusion 1 which states that in less than half of the normal nonorthodontic mouths will sufficient room develop to allow eruption of the third molars.

Fig. 5.—Showing extent of root formation and possibility of noneruption of tooth.

I will add a word about the growth process in the mandible, where most of our third molar consideration is directed. Growth of the jawbone and eruption of the teeth are found to accompany each other in the course of development. Whether eruption of the teeth is the cause of growth of the jawbone, whether growth of the jawbone is the cause of the eruption of the teeth, or whether both are brought about by some special growth-promoting agencies has as yet not been clearly established. It is, however, reasonably certain that both growth of the jaws and eruption of the teeth are individual features associated with the general pattern of development, and that the growth and development of the mandible have to occur in a definite relationship to the growth and development of the teeth.

To sum up this discussion of third molar considerations, I suggest two diagnostic aids in x-ray interpretation for your consideration:

1. Study the mesiodistal width of the *upper* molar as compared to the bony area of the tuberosity. If the bony area is not as great as the mesiodistal width of the third molar, then displacement or noneruption of the molar can

A.

B.

Fig. 6.—*A*, Right side, showing occlusal surface of third molar. *B*, Left side, showing more normal position of third molar.

be expected. This very excellent diagnostic sign is evident by 16 years of age, usually two years before the average eruption age of the normal third molar. (Fig. 1, *A* and *B*, 2, 3, and 4.)

2. A study of the extent of root formation will reveal the possibilities in *lower* third molar eruption. When root formation is complete and the tooth has not erupted, it is possible that the tooth will not erupt. That is because we know that when teeth erupt they should have about one-half of each root calcified. The rest of the calcification occurs during the final stages of eruption and the establishment of occlusion. The third molars are no exception, so that when we find them in the stage of calcification, which indicates that they should be erupting and they are not doing so, we have every right to be concerned as to their outcome. (Fig. 5.)

That there is what might be termed a considerable desire to erupt on the part of the third molars cannot be disputed. Lack of space, however, often retards them, through the initial stages of eruption. Finally, with root calcification continuing in spite of lack of space and eruption, the tooth becomes displaced or loses eruptive momentum. Morphologically and according to age it should be in the mouth and in occlusion, but practically it is not and may never be. Third molars whose roots are fully formed and are still unerupted are not a good risk. They may never become useful organs of mastication for they probably will not complete eruption. Final solution of the problem is removal of the third molars.

Proper diagnosis of future third molar usefulness is a complicated and difficult matter. Third molar relief lies in our ability to see ahead of the eventual difficulty and to offer recommendations to lessen the severity of the abnormality. I have spoken of development factors and diagnostic aids which affect our consideration of the third molar. Among these are: (1) lack of space through insufficient jaw growth; (2) the need for continuing a series of x-rays to determine position; (3) the comparative size of the maxillary tuberosity and the mesiodistal width of the maxillary third molars; (4) the extent of root calcification of the mandibular third molars in relation to their stages of eruption. There are many other little evidences to aid us in our consideration of the future value of these teeth.

In closing, I shall mention briefly two other factors:

1. When calcification of the roots of the third molar seems slow, and it often appears so, that in itself ought to be thought of as an indication of eventual third molar displacement or failure to erupt within any reasonable schedule.

2. When properly made x-rays show the occlusal surface of an unerupted lower third molar, that is evidence of future trouble, for the occlusal surface should not be seen in a normally upright tooth (Fig. 6).

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Medical Arts Building.

ORTHODONTIC DIAGNOSIS QUESTIONNAIRE

HERBERT PASKOW, D.D.S., ELIZABETH, N. J.

MORE and more the orthodontist realizes that the success of treatment of his patient (from a functional, esthetic, and stability viewpoint) depends upon thorough diagnosis, case analysis, and treatment planning. Very often the prognosis is directly proportional to the etiological evaluation of the malocclusion presented.

The more that is known about the etiologies of malocclusion, the more fruitful will be our results. Only by systematically recording our data prior to treatment can we expect to profit materially from our errors—and if we share both our failures and successes with our colleagues, mattering not the philosophy or appliance therapy utilized, only then can our profession as a whole learn, and our patients benefit. Therefore, we must all carefully question, observe, record, and, finally, consider every pertinent fact prior to planning treatment.

Every one of us agrees that the consultation visit is a very important one for the patient, parent, and, above all, the orthodontist. Experience indicates that we must record our findings, not attempt to remember them. If we can thoroughly compile the patient's medical and dental history prior to our other clinical and diagnostic aids, evaluate *all* the facts obtained, analytically arrive at hereditary, constitutional, and/or local causations of our malocclusion, and have all these on one chart, we will be rendering both our patients and ourselves the best possible service.

Realizing that the so-called "squint diagnosis" is now contraindicated, I have compiled a diagnostic questionnaire (Fig. 1). It will be noted that many facts obtained seem irrelevant and even humorous: in the case at hand, possibly, yes. However, in other cases these so-called nonsensical facts may and frequently do apply. I have found the history to approximate a half hour of consultation time. The important facts are noted on the reverse side of the individual's chart, together with the analysis of the patient's study models, facial and intraoral photographs, and roentgenographs. The reader will also notice that the latter part of the questionnaire is devoted to clinical observations at the dental chair. The practitioner's assistant may therefore fill in the first portions of the chart while the latter part must be filled in by the orthodontist himself.

As to obtaining such charts, they can be multigraphed or mimeographed at a surprisingly low cost.

Medical and Dental Case Analysis

Case No. Date:

Ref. _____ Age: ____ yr. ____ mo.

(name) _____ Sex ____ Birth date_____

(address) _____, _____, _____ Tel. _____

Father's name _____ Age ____ Nat'l. desc. _____

Mother's name _____ Age ____ Nat'l. desc. _____ Same faith?

Father's business add.: _____ Tel. _____

Physical deformities of parents _____ Patient _____

Dental malformations or malocclusion of parent _____

Of siblings _____

Missing follicles, supernumerary teeth of parent, siblings, or patient _____

_____

Number of brothers of patient _____ Sisters _____ Any miscarriages _____

Family dentist _____ City _____

Pediatrician _____ City _____

Who does patient favor in resemblance (mother or father) _____

General health as infant _____

Patient's History: Wt. at birth _____ Present wt. _____ Height _____

Full term? _____ Breast fed how long _____ Bottle fed _____

Satisfactory milk formula? _____ Accessory food aids (iron) _____

Age when walked _____ Diseases to date _____*

Age of first baby tooth _____ Difficulties with decid. teeth _____

Of first permanent tooth _____ Any missing or extracted _____

Any major falls, accidents, or operations? _____

Tonsils and adenoids present? _____ Removed by Dr. _____

Habits as an infant _____

Childhood allergies (asthma, hayfever, food, present allergy) _____

Receiving proper diet? _____ Dislike for certain foods _____

Any history of digestive upsets or malnutrition _____

Appetite _____ Manner of growth (steady or spasmodic) _____

Any impairment of: Swallowing _____ Breathing _____ Opening of jaws _____

Lateral movement _____ Clicking _____ Protrusion of tongue _____

Speech _____ Sight _____ Hearing _____ Intelligence_____

Mental attitude (poise, sensitive nature, angers easily, obedient, punished if not, get along with other children) complex _____

To Patient: Music lessons _____ Grades at school? _____

Name of school _____ Grade _____

Teacher _____ Hobbies _____

What are your favorite sports? _____

Mind wearing braces? _____ Cooperate (t. brush after each meal), wear elastics?

Restriction to eating sticky candies as taffy, caramels, chewing gum _____

To Patient and Parent: Any of the following habits:

Thumb or finger sucking, lip biting, perverted sleeping habits, pencil biting, nail biting, tongue biting or sucking, speech lisping, mastication on one side, mouth breathing (awake-asleep), eating habits _____ muscle twitch _____ (parent, sib.)

Any chin resting? _____ How's posture? _____

At Dental Chair: (walking, sitting, standing posture) _____

Vertical ht., profile _____ Head shape _____ Asymmetry _____

Frank.-mand. pl. angle _____ Mand. angle _____ Color of skin _____

Sinuses _____ Smile _____ Lip musculature _____

Swallow _____ Mucous mem. _____ Oral hygiene _____

Tongue (size, tie) _____ Frenum _____ Erupt'n to chron. age _____

_____ Hypoplasia or Hypocalcification _____

Size of teeth and mobility _____ Bite _____

Deviation of midline _____ Jiggle jaw (interf.) _____

Missing teeth _____ Caries incid. _____ Speech (repeat) _____

Classification (Angle):

Remarks (prognosis):

Fee arrangements:

Fig. 1.

When I arrive at the portion of the chart, "Diseases to date,"* I refer to a small chart placed to the right of my desk. This lists the following pathologies (exanthematous diseases omitted). The entire list can be asked within a minute's time, and notations are made accordingly, on the patient's chart:

Rickets	Typhoid	Diphtheria
Scurvy	Pneumonia	Repeated colds
Repeated headaches	Tonsillitis	Repeated sore throats
Enlarged adenoids	Sinus infections	Tuberculosis
Heart disease	Rheumatic fever	Convulsions (epilepsy)
Saint Vitus's dance	Infantile paralysis	Diabetes
Kidney disorders	Malaria	Fractures
Cysts	Abscesses	Tumors
Endocrine disturbances	Bone diseases	Blood disorders (anemia)
Severe bleeding	Bleeding gums	Jaundice
Itching, burning of eyes	Bruxism	Constipation or diarrhea

1139 East Jersey Street.

Editorial

Orthodontics in Confusion

WHO are confused? Parents who consult more than one orthodontist! Dentists who find the results of some of their referred cases disappointing or teeth reverting toward their original positions! Recent graduates of orthodontic schools who come into society meetings where wide and compelling differences of orthodontic philosophies and techniques are being discussed! And, finally, seasoned orthodontists who see the need for some basic agreement on orthodontic procedures and education which are essential in presenting a picture of stability to all who may be concerned!

A study of articles appearing in the AMERICAN JOURNAL OF ORTHODONTICS and other dental literature, and of the frantic correspondence coming in our mail, reflects the existence of a confusing and unrelated divergence of opinion pertaining to the entire orthodontic scene.

Specifically, in case you hadn't heard, we refer to the noisy conflict over the extraction of teeth in orthodontic treatment; to the determination of the most satisfactory age for starting treatment; to the techniques designed to produce very rapid movement and termination of treatment; to the application of appliances exerting more gentle tooth movement or the use of appliances in which biologic changes and the time element are not in conflict; to a multitude of methods and equipment for mathematical measurements as applied to orthodontics; and to such subjects as periodontal injury and autokinesis originating outside the forum of the American Association of Orthodontists.

The reason for this unhealthy condition, it seems to us, lies in the fact that a great deal of our orthodontic teaching is lacking in a broad concept of the science of orthodontics, being too much given over to the restricted views and teaching of individual and isolated schools of thought and experience. The result is to deprive the student of orthodontics, whether old or young, experienced or inexperienced, of the sane view of orthodontic thinking and methods which is fundamental to a well-integrated specialty which wishes to demand both public and professional confidence.

The influence on orthodontic thinking within the profession and in the field of public relations which some of these orthodontists with such diversified and often scanty preparation exert is becoming alarmingly apparent, and indicates that it is high time orthodontic societies, journals, and schools consolidate their educational thinking. Only by this means can we have assurance that our future supply of orthodontists will enter the field with a general background of orthodontic knowledge and training calculated to enable them to evaluate the restricted teachings of diametrically opposed philosophies,

theories, and techniques offered as orthodontic education by cults, special classes, and even some colleges. Such unrelated training all too frequently constitutes the sole claim to orthodontic education upon which many men enter the practice of orthodontics. The situation is becoming dangerously detrimental to the future of our specialty.

The American Association of Orthodontists should, of course, assume the leadership in the process of evaluation and consolidation. It should be, and to a great extent is, the "Town Hall" where the expression of all thoughts and demonstration of all techniques falling within the limits of reason or possible reason may be freely presented.

Further, the A. A. O. should designate a special group within the Association to bring our recognized colleges and the AMERICAN JOURNAL OF ORTHODONTICS into a more friendly atmosphere of cooperation from which some basic philosophies and procedures could be defined and established.

It has been suggested that we promote a better system of public relations. We ask you, what shall we say? One section of the American Association of Orthodontists endorsed some material for dissemination through the Public Relations Department of the American Dental Association. It was rejected because some of the information was controversial.

Sound public relations require a most careful appraisal of the accomplishments of our specialty. Let us put our house in better order!

H. F. H.

Report on the 1950 Meeting of the American Association of Orthodontists

WITH the hotel filled to capacity, an attendance of about eight hundred, the forty-sixth annual session of the American Association of Orthodontists was held at the Edgewater Beach Hotel, Chicago, Ill., on Monday, Tuesday, Wednesday, and Thursday, May 8, 9, 10, and 11, 1950.

Under the direction of President Max E. Ernst, the meeting again proved to be one of the outstanding gatherings of the organization.

The program was under the direction of the Veteran Chairman, Charles R. Baker, who was ably assisted by President-Elect Bernard G. deVries, and B. F. Dewel.

This committee arranged the program in such a way that it left the members with much to ponder about; no school of thought was neglected.

Monday afternoon, May 8, was devoted to the program conducted by the Research Committee with J. A. Salzmann, of New York City, presiding. Many excellent contributions were made.

On Monday evening the annual stag party got away to a lively start. This was followed by a good dinner and excellent entertainment. The stag party was under the direction of Ralph G. Bengston, Chairman, assisted by Leonard Grimson and Russell K. Ephland, and the affair provided a fine opening gun for the meeting.

The formal meeting opened on Tuesday morning with the address of welcome and the response by Joseph E. Johnson, the then president-elect, of

Louisville, Ky. This was followed by the president's address by Max E. Ernst, of St. Paul, Minn.

Howard E. Strange, of Chicago, Ill., then read a paper on the subject of "European Social Orthodontics." This was followed by a paper, "Simplicity in Orthodontic Concept and Treatment," by Andrew F. Jackson, Philadelphia, Pa.

Another feature of the Monday morning session was a paper on "The Place of Orthodontics in the Complete Rehabilitation Program for Congenital Facial Clefts," by Wayne B. Slaughter, Chicago, Ill.

Another one of the high lights of the meeting was the International Luncheon under the direction of John W. Ross, Chairman. E. C. Lunsford acted as master of ceremonies, and Gerald Franklin represented Canada.

General clinics were held on Tuesday afternoon. The clinics were well presented and reflected great pains and preparation. A list of the clinics will be found in the News and Notes Section of this issue of the JOURNAL.

One of the features of the meeting was the address by Honorable Lester C. Hunt, United States Senator from Wyoming, on the subject of "Socialized Medicine and Possible Regimentation of the Dental Profession." Senator Hunt, being a dentist as well as a senator, made his subject highly interesting and appropriate to the changing times.

Those who have followed Senator Hunt's proposals in health service plans were particularly interested in his suggestions.

The program on Wednesday morning consisted of "The Importance of the Tongue in the Development of Normal Occlusion," by D. Robert Swinehart, Baltimore, Md. This was followed by "A Restatement of the Myofunctional Concept in Orthodontics," by Alfred P. Rogers, Boston, Mass. In turn came a paper, "Anatomy and Physiology of Head and Neck Musculature," by Allan G. Brodie, Chicago, Ill.

The Past-Presidents' Luncheon was held on Tuesday. This proved to be one of the most interesting Past-Presidents' Luncheons ever held by the American Association of Orthodontists. The talented master of ceremonies was Lowrie Porter, of New York City, the immediate past-president. This gathering is traditional each year and an annual classic for all the past-presidents. Current trends in orthodontic thought and progress are discussed by the former leaders of the Association.

On Wednesday afternoon a paper was given on the subject of "Heredity, Growth, and Observation as Related to Extraction Procedures," by Edward A. Cheney, Lansing, Mich. Following this was a contribution by William K. Gregory, New York City, Curator of the American Museum of Natural History.

Wednesday night, the President's reception banquet and entertainment proved to be a gala affair and lasted until the wee hours of the next day. It was under the direction of Richard Smith, William Ford, and Fred Barich.

Thursday's program consisted of a paper by W. R. Alstadt, of Little Rock, Ark., entitled "Professional Ethics." This was followed by "A Clarification of Fundamentals Pertinent to the Tweed Concepts," by F. Copeland Shelden, Kansas City, Mo. The subject of "The Periodontal Response to Various Tooth Movements, by Robert E. Moyers, Toronto, Canada, followed.

The educational clinics were held on Thursday afternoon; "Principles and Appliances," by John Mather Jackson, Philadelphia, Pa.; "The Prosthetic Correction of Oral Abnormalities and Deficiencies (Maxillary and Oronasal Pharyngeal Space)—Cleft Palate Training Program, University of Illinois, by Henry Glupker. Modern color moving pictures were used to demonstrate: "The Management of Stainless Steel" by Archie B. Brusse, Denver, Colo.; "Precious Metal Removable Appliances," by George B. Crozat, New Orleans, La., and Samuel D. Gore, New Orleans, La. This clinic was an amazing demonstration, even to the old-timers, as to the possibilities of this method of treatment.

A group educational clinic was given entitled, "A Demonstration Showing Technique of Treatment According to the Tweed Philosophy, With Final Results." This was presented by the Tweed Study Club of Illinois, and the clinicians were as follows:

Ben L. Herzberg, Chicago, Ill.
George E. Englert, Danville, Ill.
Louis F. Tinthoff, Peoria, Ill.
Lorin B. McEwen, Peoria, Ill.
Walter W. Winter, Decatur, Ill.
Maurice C. Berman, Chicago, Ill.
Walter N. Epstein, St. Louis, Mo.

The following officers were elected for the new year:

President	Joseph E. Johnson, Louisville, Ky.
Vice-President	Homer B. Robison, Hutchinson, Kan.
President-Elect	Bernard G. deVries, Minneapolis, Minn. (Brooks Bell, Dallas, Texas, was nominated for President-Elect.)
Secretary-Treasurer	George R. Moore, Ann Arbor, Mich.

Additional facts in regard to this outstanding meeting will be reported in the JOURNAL when they are made available.

Any comment in regard to the Chicago meeting would not be complete without tribute and thanks to all the hard-working committees that made this meeting possible.

The ladies attending the meeting reported wonderful entertainment under the guidance of Harland L. New, Chairman. The Chairman was assisted by the Hostess Committee composed largely of the wives of the orthodontists located in the Chicago area.

To put it simply, the Chicago meeting was a great success, and about eight hundred orthodontists are no doubt ready to convey their thanks to the officers and committees who were responsible for the meeting.

H. C. P.

Child Welfare

SO MUCH interest is manifest in all branches of health service, particularly the branches that have to deal with child welfare, that I have digested some of the plans ahead as sponsored by various organizations interested in child welfare.

According to Oscar R. Ewing, Chairman of the National Conference Committee, Federal Security Administrator, citizen committees in each of the states and territories, appointed by the governors, are now at work surveying the needs of their children, determining what services are available, what more should be done to provide a better environment in which children and young people may grow to responsible citizenship, and how to make such service available.

The national organizations, business, farm, labor, professional, church, youth, and lay citizen, are stimulating discussions of child needs, developing fact-finding projects, and undertaking cooperative planning, as their part in preparation for the conference, to be held in December, 1950.

It is pointed out by the chairman that the Midcentury White House Conference on Children and Youth bases its concern for children on the primacy of spiritual values, democratic practice, and the dignity and worth of every individual. Accordingly, the purpose of the Conference will be to consider development in children of the mental, emotional, and spiritual qualities essential to happiness and to responsible citizenship, and what physical, economic, and social conditions are deemed necessary to this development.

To do this the Conference will:

1. Bring together in usable form pertinent knowledge related to the development of children and indicate areas in which further knowledge is needed.
2. Examine the environment in which children are growing up, with a view to determining its influence upon them.
3. Study the ways in which the home, the school, the church, the law, welfare agencies, and other social institutions, individually and cooperatively, are serving the needs of children.

As pointed out by Katherine E. Lenroot, "One difficulty in the present situation is that much knowledge about children is incomplete and isolated. It needs to be brought together and rounded out so that the contributions of each science and profession can be used more effectively by parents, by teachers, and by all who live with, work with, and serve children.

"The conference is placing great emphasis on the ways in which citizens can act responsibly and cooperatively in behalf of children. Committees designated or appointed by the Governors are at work in all States and Territories, and over 200 National voluntary organizations, as well as agencies of the Federal Government, are participating in the preparatory work.

"All groups now at work for the Midcentury White House Conference on Children and Youth are demonstrating their concern for children in a way that should produce rich returns for the next generation."

When you answered the questions which the census taker asked you in April about the children in your household, you were helping with the Midcentury White House Conference on Children and Youth, called by the President for the week of Dec. 3, 1950.

One of the first things the United States Census Bureau is going to do with the facts its interviewers collected is to tabulate data about children to be ready for the follow-up of the Midcentury Conference.

The speed-up job which the Census Bureau is doing for the Midcentury Conference is just one of the many ways in which agencies of the Federal government are helping to make this the most significant gathering of the sort ever held in the United States.

Representatives of the ten Federal departments and offices, each with responsibility for some program or activity that directly or indirectly relates to children or young people, have banded together in an Advisory Council on Government Participation to the Midcentury Conference.

Included in the Council are representatives of the Departments of Agriculture, Commerce, Interior, Justice, and Labor, the Federal Security Agency, Housing and Home Finance Agency, Administrative Office of the United States Courts, and Selective Service. Dr. Hazel K. Stiebeling, Chief of the Bureau of Human Nutrition and Home Economics, United States Department of Agriculture, is the elected chairman of this advisory council.

Drawing on their extensive knowledge of population and economic trends affecting child life, and of public and private services for children in education, health, welfare, recreation, and protection, Council members will have ready for the Midcentury Conference the most complete chart book of national data on children ever assembled.

The country's wealth in children, which jumped from 41,000,000 children in 1940 to 46,000,000 in 1949, has greatly increased the need for child welfare services, reports Mildred Arnold, Director of the Division of Social Services of the Children's Bureau, Federal Security Agency.

"To be sure, progress has been made in recent years to meet some of the increased need for these services," Miss Arnold says. "Through joint effort by voluntary and governmental agencies, many communities have improved and expanded their child welfare programs. Especially encouraging has been the increased emphasis on services to children in their own homes, to strengthen family life and prevent family breakdown wherever possible. Many agencies have been experimenting in developing special types of foster care for children who cannot receive the care they need in their own home.

"If the homeless, neglected, dependent, delinquent, and handicapped children needing help are to be given the opportunity to develop the mental, emotional, and spiritual qualities essential to individual happiness and citizenship, ways must be found to provide more welfare services for them."

It is contended that much less is known about the greatest single resource, children, than is known about crops and livestock.

It is stated that in 1948 $450,000,000 was spent on hospital care for mentally ill children and adults, and in the same year little or nothing was spent to learn how children grow.

Children today are growing up in a period of rapid change. Scientific advances are changing life drastically. Many social and political philosophies are being challenged. Children are subject to powerful emotional pressures.

These are the facts of life that the President urges citizens in every community to consider as they mobilize their ideas and recommendations for the fifth national conference on what this nation wants for its children.

Child Health Day this year will thus serve as stock-taking time in all communities to determine whether we are doing all we might do to meet the spiritual, emotional, and social needs of children.

Youths in high school and college, and employed youths are taking an active part in the Midcentury White House Conference on Children and Youth.

President Truman set the precedent for this participation when he appointed five young adults to the National Committee for the Conference. State, territorial, and county committees are asking youths from 14 to 21 years to serve with them in their state-wide study and action programs.

Citizens across the nation are beginning to realize the valuable point of view of young people in the important problems this Conference must face.

In March, 75 representatives of youth groups from twenty states met in Washington to form an Advisory Council on Youth Participation, one of the four advisory councils to the Conference. Arnulf Pins, a college student at Columbia University and resident of Paterson, New Jersey, was elected chairman of this council. Mr. Pins, a representative of the National Jewish Welfare Board, brings to this job experience as vice-chairman of the World Assembly of Youth, an officer in the Young Adult Council of the National Social Welfare Assembly of Youth, and youth representative to the United Nations.

The newly formed council, at its March meeting, defined problems which young people would like to receive nationwide attention at the fifth White House Conference on Children and Youth. Building true democracy and spiritual values was given top priority. Toward this end, it was recommended that young people should have representation in community policy bodies, and should join with adults in action on problems affecting family and community welfare. The family, the school churches, and other community institutions should take the initiative in asking youth to share this responsibility with adults.

The council hopes to stimulate many young people to take a more active part, within their own organizations, youth councils, and community clubs, in such problems in preparation for the White House Conference that meets in Washington in December, 1950.

"With the establishment of the Advisory Council on Youth Participation, the youth point of view on these and other important questions will be channeled to the National Committee of the White House Conference. Represented in this Advisory Council are the interests of some fifty young people's organizations, such as the Young Men's Christian Association, the Four-H Clubs, National Student Association, the Boy Scouts, Campfire Girls, young people's religious organizations, student councils, and others.

"Elected to serve with Mr. Pins are: as vice-chairman, Marjorie Jean Fitton, Salvation Army; Stefan Anderson, American Red Cross; Ernestine Herbin, New Homemakers of America; as secretary, DiAnne E. Mathre, Four-H Clubs of America.

"It is our plan, in the White House Conference, to sift and sort the information from all these sources, and to put it into a shape that will be useful to parents, teachers, clergymen, social and health workers in their great task of giving the next generation a good start in life.

"Where science is found still to have no answers, we propose to challenge it to find answers, to fill the gaps in what we need to know to do our best by our children.

"This is not an over-and-done job we are tackling. The search for more facts and a better understanding of human relations will go on as long as people exist. But the White House Conference will give this search a new momentum, and, I hope, a new time schedule. For never was it more urgent than now that we equip the next generation with the capacity to live happy and responsible lives, if they are to help in building a world of peace and good will.

"We have a lot of notions on good child rearing practices. These notions are based largely on experience and on the opinions of specialists working with children, gained from limited observations. And because we have so little actual proof of just what is good child rearing, we are constantly modifying these notions.

"Even the so-called experts in these matters differ widely in their opinions on some child development problems. The reason the experts and others differ in their views is simply because there is no comprehensive body of research to which they can turn. Why?

"We know far less about our children—our greatest resource—than we know about crops and livestock, or about coal and oil, or even about atomic energy."

Dr. Edwin F. Daily, Director of Health Service in the Children's Bureau Federal Security Agency, says:

"Many medium-sized American communities have a number of medical and other organized health services under public or voluntary agencies, usually operating independently of each other. . . . Too frequently one agency can only provide part of the care a child needs, yet it has no working relations with nearby agencies that could provide the rest.

"Why don't the agencies pull together as a team? And why don't all health agencies for children, both public and voluntary, work together? I think many communities would be amazed at the better job they could do for children merely by such agencies teaming together their present professional and financial resources."

Dr. Daily points out that he certainly does not advocate the merging of services of public and voluntary agencies, but, rather, informal arrangements that would make it easy for parents to utilize most effectively the specialized services their children need.

Some communities, he believes, may want to go a step farther by setting up a pediatric diagnostic and treatment center, preferably as a part of the community health center, where all of the organized child health services in the community could be located. A child could be referred to the center by the family physician, or by the health or welfare department staffs, or by the schools following a medical examination. After a general review of the total health of the child at the center, the pediatrician in charge would then refer the child to the specialists needed to help him.

Much of the information contained herein was gathered from current releases of the Social Security Board, sponsoring this great movement. It is thought that sooner or later orthodontic treatment and care will receive very careful study by the child welfare group.

Reports

REPORT OF THE EDITORIAL AND PUBLICATION BOARD

The year 1949 marked the completion of the thirty-fifth consecutive annual volume (in regular monthly issues) of the AMERICAN JOURNAL OF ORTHODONTICS.

It is always interesting to recall something of the origin of the JOURNAL. During the annual meeting of the American Medical Association in 1914, the eminent Dr. Charles H. Mayo read a paper before the Section of Stomatology at which Dr. C. V. Mosby was present. During the course of his paper Dr. Mayo made a prediction to the effect that there was a branch of dentistry known then as "orthodontia" which was destined to achieve the position of one of the most important branches of preventive medicine.

This statement as it was elaborated by Dr. Mayo so deeply impressed Dr. Mosby that he became inspired to start a journal which as a service to humanity could be instrumental in the fulfillment of Dr. Mayo's prophecy. The result was the appearance of the first issue of the INTERNATIONAL JOURNAL OF ORTHODONTIA in January, 1915.

The evolution of the JOURNAL was marked by a series of changes made necessary from time to time in order to meet economic demands and other requirements. It may correctly be said that the survival of the JOURNAL through many trying years was due to the vigilance and fortitude of Dr. Mosby, and the fact that he never waivered from faith in his first conviction.

It is in recognition of the credit due to Dr. C. V. Mosby and the loyal cooperation of The C. V. Mosby Company that this Board deems wise as an introduction to call attention to these facts which are so important to keep in mind. As a result of their undertaking, the JOURNAL carries within its covers the story of the rise and progress of orthodontics through a period in its history which will remain epic throughout the annals of time.

Today the AMERICAN JOURNAL OF ORTHODONTICS, devoted exclusively to the specialty, is one of the most outstanding journals in American dentistry and is the official organ of the American Association of Orthodontists, its seven component societies, and the American Board of Orthodontics.

This report also covers the annual statement of the second year of operations under the current Contract between the American Association of Orthodontists and The C. V. Mosby Company. This Contract, which went into effect Jan. 1, 1948, placed complete responsibility for the editorial operation of the JOURNAL within the authority of this Association. The C. V. Mosby Company agreed to pay a sum not to exceed $2,000 for illustrations and to contribute an amount of $1,800 per annum to the treasurer of the American Association of Orthodontists toward editorial expenses.

During the first year of this Contract (1948) the cost of illustrations exceeded the allowance by $508.33. This, with $109.41 incidental expenses of the Editor-in-Chief, cost this Association $617.44. The audit for the year of 1948 also shows an over-all deficit to The C. V. Mosby Company of $1,499.61.

Clearly this was not a healthy report, and if the Contract was to function in a mutually fair manner something *had to be done.* The Mosby Company expressed their willingness to carry on, and in order to meet the responsibility of the Association the Editorial Staff realized the necessity of *getting down to business.*

The matter of advertising was investigated. For this Mr. Harold J. Mostyn, advertising manager for the eleven Mosby journals, was consulted. With the control on

page rates based on circulation, the confining of advertisements to products approved by the Council on Dental Therapeutics of the American Dental Association, and in consideration of the advertisement-appeal to the subscribers, it was evident that no more profitable increase could be expected from this source.

The only hope from the Mosby Company's point of view was in an increase in both the number and price of nonmembership subscriptions, and this would have to be made possible by the quality of the articles published. For this purpose care has been taken to arrange the distribution of articles each month with a variety and sequence of subjects, impartially selected, to hold the reader's interest and cover a wide field.

It was also determined that the number of illustrations per article had to be cut down in a manner agreeable to the authors, which would not detract from the effectiveness of the material, but in many instances might even improve the text from the reader's viewpoint. There was but one way to do this, and that was to get directly to the essayists before the preparation of their papers. For this the President of the American Association of Orthodontists and the presidents of the sectional societies were notified to instruct the chairmen of their executive committees to have all papers prepared (first) for publication with illustrations confined to the minimum, or to such key illustrations as could be grouped for publication. This plan proved to be effective and *must be continued*. Steps should be taken by this Board of Directors to see that this is done and that the action of the Editorial Staff has the appoval of the Board of Directors of the American Association of Orthodontists in this respect.

All the officers contacted were most helpful and in the main the essayists were agreeably cooperative, since they could ad lib at length at the time of their presentations.

The most difficult task the Editorial Staff ever has to perform is the long and sometimes unpleasant correspondence with authors concerning the reduction of a prohibitive number of illustrations. It is a hardship on all parties concerned and is a condition that is much better to direct in the beginning than to correct later.

It is not the policy nor the intention of the Editorial Staff to deny any author the privilege of full and adequate illustrations sufficient to emphasize his text. But difficulties arise when a mass of more or less superfluous material accumulates a needless expense. Neither is it the definite aim of the Staff to stay within the limit of the Mosby Company's allowance at the expense of the finest preparation and presentation of our literature.

To this end President Max E. Ernst has expressed the following opinion: "I would like to reiterate a statement I have made before, namely, that scientific papers presented before Sectional Societies are published for the benefit of the entire membership of the Association, and, if necessary, the JOURNAL deficit [should] be underwritten by the treasury of the Association rather than by the constituent societies. We should not penalize a constituent society for publishing material which is valuable and necessary to all of us."

The result of these efforts appears in the following report from Mr. Joel A. Rogers of The C. V. Mosby Company: "The total cost of illustrative plates for the past year was $1,834.20, so there is no charge back here against the Association, thanks to care having been exercised by the Editorial Staff in this connection."

In other words, the Mosby Company was saved $165.80 over the previous year's expense, and the Association in like manner a sum of $508.03.

Mr. Rogers further reports: "The financial report for the JOURNAL reflects a net gain for the twelve month period of 1949 of $150.48. This, of course, is no profit in the real sense of the word, but on the other hand for the year of 1949 we were at least out of the red. Quite naturally we are striving with your help to make a profit in the future which will justify the investment of time and money on our part which the JOURNAL requires, but we do feel that now we are on firm ground."

This is a far cry from the report of last year when the Mosby Company sustained a loss of $1,499.61, which with the small profit makes a saving of $1,650 over the previous year. The Association will receive a voucher from the Editor-in-Chief in the amount of $136.06 for postage, telegrams, telephone, and such incidentals for the year of 1949.

The total distribution of the JOURNAL is 3,820 copies per month. This is divided into 2,670 nonmembership, 990 members of the American Association of Orthodontists, and 160 free copies to libraries, agents, and advertisers.

This Board will welcome any suggestions or opinions which the Board of Directors may see fit to offer. It is our recommendation that the Editor-in-Chief and his Staff receive a vote of commendation and confidence for their splendid accomplishment. This all demonstrates the care with which the component societies should select their sectional editors. They deserve the fullest support of this Association, and the best cooperation of the American Board of Orthodontics and the seven component societies. It is obvious that the improvement in the status of the JOURNAL is the result of their labors also and of the diligence with which they have striven to protect the best interests of this Association and the Mosby Company, at the same time producing a JOURNAL that is a credit to its constituents and abreast with the latest strides in orthodontic progress.

Respectfully submitted,
GEORGE H. HERBERT.
SILAS J. KLOEHN.
JOSEPH D. EBY, Chairman.
GEORGE R. MOORE,
Secretary-Treasurer, A.A.O.

REPORT OF THE AMERICAN BOARD OF ORTHODONTICS TO THE AMERICAN ASSOCIATION OF ORTHODONTISTS, 1950

The American Board of Orthodontics has just completed its twenty-first year of activity. During the past session four full days and three evenings were given over to our efforts, in addition to many months of careful appraisal of material submitted for grading, in the form of theses. During this period the completed work of 31 candidates for certification was examined, and of these 27 were found worthy of receiving the approval of our Board. This makes a total of 329 orthodontists who have been certified to date. Of the total number certified since the inception of the Board in 1929, 25 have passed away. Held over from last year's examination were 66 candidates who were granted an additional year to complete their work.

At the present session the applications of 44 orthodontists were processed and the work necessary to earn certification was assigned. These candidates will come up for their final tests at the next annual meeting of the Board which will be held in Louisville, just prior to the 1951 annual meeting of the American Association of Orthodontists.

As you know, the American Board of Orthodontics is the oldest certifying Board in dentistry, having been brought into existence upon the authorization of the American Association of Orthodontists in 1929. Other specialty boards now operating are as follows: The American Board of Periodontology, The American Board of Pedodontics, The American Board of Prosthodontics, and the American Board of Oral Surgery.

Many of you know that in spite of its many years of service the American Board of Orthodontics has not yet received the approval of the Council on Dental Education of the American Dental Association. Numerous conferences have been held with the representatives of the Council, and we are hopeful that soon our Board will meet all requirements necessary. These are largely technical and there is no serious conflict between our organization and the Council on Dental Education. The proposal for changes in the requirements for active membership in the American Association of Orthodontists made at last year's meeting will, if adopted, we believe eliminate the principal cause of our differences and make it possible to attain the desired goal.

Our Board was the third such board brought into existence in either medicine or dentistry and existed for twenty years before any other specialty board was established in the dental profession. It has never asked for legal recognition, but in spite of this

fact in six states which have specialty laws the certificate of the American Board of Orthodontics can be accepted in lieu of an examination. These states are Illinois, Kansas, Michigan, Oklahoma, South Carolina, and Tennessee.

The directors of the Board whose service extends over a considerable number of years have been made conscious of the fact that the material now being presented by candidates for certification is definitely improving in quality. This is very encouraging and reflects credit upon the institutions now giving orthodontic training, as well as other sources of instruction available to orthodontic practitioners.

The Albert H. Ketcham Award which is sponsored by the Board in collaboration with the American Association of Orthodontists will not be made this year. The committee charged with this responsibility will meet immediately following this meeting and discuss whether an award will be made at the 1951 convention. You are all aware that while this award has been granted almost every year up to this time, there is no obligation upon the committee to make the award annually.

This year the Board of Directors of the American Association of Orthodontists will nominate a director to serve for a period of seven years on the American Board of Orthodontics to take the place of the Board's retiring president. We await such nomination and trust that it will find full acceptance by the members of the American Association of Orthodontists.

As the retiring president of the Board I wish to express my deep appreciation for the honor of having served as a director through so long a period of time. The effort it entailed has been more than offset by the stimulus of sharing responsibilities with a group of men whose efforts and ideals are wholeheartedly dedicated to the advancement of the specialty of orthodontics.

Respectfully submitted,
JAMES D. MCCOY, PRESIDENT.

Department of Orthodontic Abstracts and Reviews

Edited by
DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City

An Introduction to Animal Biology: By John B. Parker, Ph.D., Professor Emeritus of Biology, The Catholic University of America, Washington, D. C., and John J. Clarke, Ph. D., Assistant Professor of Biology, Retired, The Catholic University of America, Washington, D. C. Third edition St. Louis, The C. V. Mosby Company, 1949. Price, $4.00.

In the preparation of the edition, a questionnaire was submitted to a large number of teachers. As a result the plan, purpose, and general content of the text have been maintained.

Material on hormones and vitamins has been brought up to date and the Rh factor has been included in the discussion of blood groups. In the chapter on the vertebrates, the general plan of body construction is described.

In the introductory chapter, a description is provided of the cell and its various components. Cell division is discussed as are diffusion and osmosis. The honey bee, it is pointed out, is a social species. It lives in colonies or communities in which there are thousands of individuals and in which there is a marked division of labor with the work of each member being a contribution to the welfare of the community as a whole. The colony is divided into a queen, drones, and workers. It will be of interest to the uninitiated to know that the workers are females. The book has a glossary, bibliography, and index.

Facial Reconstructions: *Am. J. Phys. Anthropol.*, n.s., **6**: 321-322, September, 1948.

From a skull it is quite impossible to reconstruct the character of the hair, eyes, nose, lips, ears, eyebrows, skin creases, fullness, or expression. In short, it is impossible to reconstruct the appearance of the face. Nevertheless, such fancy reconstructions are to be found in almost every book dealing with the evolution of man. It is highly desirable that they should be dropped, for they do real harm. Their creators have endowed them with traits and expressions which follow the formula that the earlier or more primitive the type, the more brutal; the later the type, the nobler the expression. The probabilities are that the expression of early man was not less benign than our own.

As if in answer to these strictures, there appeared, after the main body of the present article was written, several papers on the reconstruction of the facial appearance of a dissecting-room (Negro) cadaver from the skull. These reports by Dr. W. M. Krogman are of considerable interest.

On the whole, the measurements between the head and the bust were very close. This one would expect, for certainly there is some resemblance between the deceased subject and his post-mortem bust. There are differences which we need not consider here. In the Negro there are such more or less

constant features, such as kinky hair, thickish lips, broad nose, and small ears, upon which to rely. I think it would be possible to make some recognizable reconstructions on some skulls from Negro cadavers, but not on most. I am convinced that recognizable reconstructions would be impossible in the vast majority of Whites. Certainly one could not expect that a close likeness to a person's appearance during life could be established from the skull alone.

The face of the cadaver provides an expressionless appearance to which many other cadavers may bear a fair resemblance, an appearance, by the way, which may very little resemble what the person actually looked like during life. Hence the difficulties which close relatives have often experienced in identifying a body after the lapse of a little time.

Omitting size and expression of the eyes, the expression of the face is perhaps something that may never be achieved, and possibly is even unnecessary for the purposes of identification. In Whites, the form and color of hair, size and form of lips, shape of nose, eyebrows, and hairline, distribution of subcutaneous fat, and a good many other soft tissue characteristics vary considerably. These bear little or no relation to the skull beneath, and it is precisely these features that give the person his unique appearance. How then can these features be reconstructed in a single person? Accurate reconstructions are not impossible, but, considering the kind of variables involved, they are highly improbable. Further experiments of the kind conducted by Dr. Krogman will finally settle this question.—M. F. Ashley Montagu, A Study of Man Embracing Error, Technol. Rev. **49**: 345-347, 356, 358, 360, 362, 1947.

On the Question of Depression of Deciduous Molars: By Prof. Dr. med dent., Dr. med. Hans Heuser. From the Dental School of the University of Marburg (Lahn), Germany, Assistant Director, Prof. Dr. Dr. Hans Heuser, *Zahnärztl. Welt.* **3**: 97, April, 1948.

During the past few years special attention has been paid to depression of deciduous molars. Cases of depression were formerly considered to be retentions of the teeth in question. It cannot be doubted anymore that many of the cases considered as retentions of deciduous teeth represent true depressions.

As differentiated from true retention, the depression of a deciduous tooth is an occurrence in which a deciduous tooth of previously normal function and occlusion is depressed underneath the normal occlusal plane or even completely pressed into the jawbone by forces of the environment and mastication. Thus a depression could be considered a secondary retention.

The majority of cases of depression in deciduous molars occur where the forces of tilting and pressure of the neighboring teeth are greater than in the front teeth of the deciduous dentition. Occasionally, however, these events can be observed also in the incisors and canines. In this connection, Zák described the reimpaction of a lateral upper deciduous incisor, the cause of which in his opinion being the very early resorption of the root at a time when the germ of the permanent tooth was still deeply embedded in the jaw.

According to the operation of forces x-ray films of patients with depression of deciduous molars reveal fairly regularly certain positions of the neighboring teeth. The lateral incisors are more or less tilted toward each other, whereby the tooth which is located more distally usually shows the larger degree of tilting.

The two crowns of the tilted teeth are located more or less over the depressed tooth and keep it in its position. This condition represents, however,

only the final stage of a certain development. As a facilitating factor for the initiation of depression of a tooth, we can consider cases in which the successor of the depressed tooth is either missing or shows a developmental anomaly. Under these circumstances the deciduous tooth does not encounter any resistance in the jaw during its depression so that the neighboring teeth which are tilted over it and the additionally effective masticating pressure can force the deciduous molar, which was originally positioned in normal occlusion, into final depression. Thereby, the adjoining surfaces of the neighboring teeth act as inclined planes, on which the tooth is being guided always deeper and deeper into the jaw. Korkhaus attributed an additional significance also to the pressure of the tongue.

The question whether there is a primary or secondary retention, i.e., depression of a deciduous molar, sometimes cannot be easily decided upon. In cases of doubt it will never be finally solved, especially if the tooth in question is a perfectly normal and healthy one. In all cases, however, where the deciduous tooth is carious or even filled, the depression cannot be doubted.

The author describes a rare case of depression of a deciduous molar, where the tooth in question in spite of extreme decay was found to be covered by a completely healthy mucosa.

In his opinion, depressions in the deciduous dentition are among the greatest rarities. Innersecretory disturbances can result in retarded eruptions of deciduous teeth or even in retentions, but isolated retentions of a single deciduous molar in otherwise normal conditions cannot be explained by innersecretory disturbances alone. All the more we are entitled to assume that the retention of deciduous teeth is not a true one but a secondary one, i.e., a depression in many instances where other features are missing such as anomaly of the tooth, disturbances during its time of development, or displacement or trauma to the tooth germ by disturbances in its vicinity. The presence of a true depression is even more probable in those cases where, besides the positions of the neighboring teeth described, we can find the permanent successor missing or in an abnormal position and where masticating conditions presenting biting pressures contribute to the depression. Notwithstanding all these factors, the diagnosis can be definitely secured only by demonstration of a filling in the tooth in question or by its decay.

Translated and digested by
Walter I. Rosenfeld,
New York, N. Y.

The East Greenland Eskimo Dentition. Numerical Variations and Anatomy: By P. O. Pedersen. Copenhagen, Denmark, C. A. Reitzel, 1949. 256 pp. Price, $5.00. Illustrated.

Professor Pedersen is Professor of Diagnosis and the Assistant Dean of the Danish Dental School in Copenhagen. His report on the dentition of the East Greenland Eskimo is an exhaustive, scholarly, and exceptionally readable treatise which should be of pertinent interest to the whole field of dentistry. An interesting and informative introductory chapter tells us where the Eskimos are located, what is known about their origins and ethnic relationships, the settlement of Greenland, and the like. The material and scope of the study are then described, and even a mere listing of these indicates the remarkably broad gauge of the work. The dentitions of several thousand living Greenland Eskimos were examined: Eskimos in regions where they had been long in contact with the white man and his foods, and Eskimos in regions where they were virtually unmixed and used little or none of the white man's staples (e.g.,

sugar, flour). In addition to clinical studies, biochemical tests, x-rays, and dental impressions were taken on good samples of the population studied. For comparative purposes, the teeth of a series of pre-Danish East Greenland Eskimo skulls were examined and also reported upon in the present volume.

A chapter is devoted to an analysis of dental numerical variations in the Greenland Eskimo, with reference both to increase and decrease of teeth in the permanent dentition. An important finding here is the *nonconfirmation* of a view held by some that the upper lateral incisors are more frequently congenitally missing in dolichocephalic than in brachycephalic peoples, nor could it be verified that there is an inverse ratio of missing upper lateral incisors and missing third molars. The fact of a high incidence of congenitally missing third molars among the Eskimos is corroborated, the modern East Greenland group showing a lack of one or more of these teeth in 36.6 per cent of the adults examined. It is fully demonstrated that, in the Eskimo, congenital absence of third molars is not caused by lack of space brought about by decrease of function.

Following is a detailed chapter on the dental anatomy of these people, in which appears, for example, the measurements of crown and roots of the individual teeth, a description (or incidence) of the tubercle of Carabelli, facial pits and grooves, number of cusps and crown patterns of the molars, occlusal wrinkles, pulp cavity, number of roots, course and divergence of roots, and fusion of roots. It should be noted that all of the teeth of the dentition are considered, each in relevant detail.

A final chapter reviews the findings and gives a penetrating discussion of their general significance.

There can be no question that the book is an important contribution to the dental literature. Not merely is it a mine of information on the dentition of the Eskimo, which is of stimulating interest per se, but a wealth of comparative data throughout the book on the dentitions of various groups of whites, Negroes, Japanese, Chinese, etc., should make the volume especially useful to orthodontists and the dental profession generally. The author has plainly attempted to use the comparative data to attain a clearer and broader understanding of the facts, and a critical use of these same data should induce among the men of dentistry also a broader and keener sense of the biological significance of the dentition of man.

It may be mentioned that the book is profusely illustrated and has an unusually good index. An excellent bibliography of 350 references attests to the scholarship inherent in the work, and will be an exceedingly useful compendium for all those doing comparative dental research. Of especial interest to orthodontists will be the many cases of crowded teeth clearly discernible in the illustrations, a noteworthy circumstance in view of the fact that these Eskimos are an unmixed, "primitive" group. One looks forward with keen anticipation to other publications by the author on additional material in his possession, some of which no doubt will deal specifically with the problem of occlusion and crowding.

M. S. Goldstein.

News and Notes

American Association of Orthodontists

At the meeting of the American Association of Orthodontists held at the Edgewater Beach Hotel, Chicago, Ill., during the week of May 8, the International Luncheon proved to be an outstanding event.

The following orthodontists from foreign countries were present:

Dr. Klaas G. Bijlstra, Gronigen, Holland.
Dr. Jose A. Carrillo, Caracas, Venezuela.
Dr. Ingrid Daugaard-Jensen, Copenhagen, Denmark.
Dr. Alexis W. Eastwood, London, England.
Dr. Alicia Lazo de la Vega, Mexico City, Mexico.
Dr. Telesforo Olaviaga, Buenos Aires, Argentina.

The following spoke on the luncheon program:

Dr. E. C. Lunsford, Master of Ceremonies.
Dr. Samuel Fastlicht, Affiliated member.
Dr. Gerald Franklin, Canadian member.
Dr. Sergio Giquel, Vice-President of the Association.

The following is a list of interesting clinics that were given at the meeting of American Association of Orthodontists, Edgewater Beach Hotel, Tuesday, May, 9, 1950:

2:00 TO 5:00 P.M. GENERAL CLINICS

1. The Extraction Problem in Orthodontics. Sidney Asher, Chicago, Ill.

2. Extreme Malocclusions May be Corrected by Cooperative Oral Surgery and Orthodontics. Gerald V. Barrow, Ann Arbor, Mich.

3. The Use of the Vertical Spring Loop for Closing Spaces. Howard J. Buchner, Oak Park, Ill.

4. A Demonstration Showing Endurance of Various Elastic Materials in Simulated Fluids of the Mouth. A. S. Bumgardner, Charlotte, N. C.

5. A Simplified Photographic Technique Using the Leica Camera. Donald A. Closson, Kansas City, Mo.

6. Polystyrene Retainers. R. Burke Coomer, Louisville, Ky.

7. A Simplified Process for Constructing Plastic Retainers—No Waxing, No Flasking, No Investing, No Boiling, and No Delay. Byron W. Cordes, St. Louis, Mo.

8. An Instrument for Tying Wire Ligatures. Milton R. Culbert, Toronto, Ontario.

9. Manipulation of the Twin Wire. John J. Dolce, New York, N. Y.

10. Cases Treated According to Philosophy and Technique of Charles H. Tweed. George L. Englert, Danville, Ill.

11. Construction of Molar Loop Bands From Chrome Banding Material. Russell K. Ephland, Park Ridge, Ill.

12. Band Technique. Leigh C. Fairbank, Washington, D. C.

13. How to Make Study Models and Retainers With the Rapid Self-Curing Acrylics. Herbert G. Frankel, Cincinnati, Ohio.

14. Models of "Before and After" Treated Orthodontic Cases. F. A. Grimmett, Youngstown, Ohio.

15. Model Clinic—25 Cases With Before and After Casts. Edgar T. Haynes, Indianapolis, Ind.

16. Six Cases (Before and After Records). Brownell Jamison, Rochester, N. Y.

17. Time-Saving Technique for Processing Retainers. Howard H. Jan, San Francisco, Calif.

18. A New Approach to Retention. Charles W. Konigsberg, Oakland, Calif.

19. Fixed and Removable Linguals. Clare K. Madden, Greenwich, Conn.

20. Simplified Method for Constructing Retainers. Milton J. Meyers, Lawrence, Mass.

21. Preliminary Suggestions for Uniform Records to Accompany Transfer Patients. H. I. Miller, Flint, Mich.

22. Occipital Anchorage in Orthodontics. Thad Morrison, Jr., Atlanta, Ga.

23. Adjunct to the Twin Arch Appliance. Cecil G. Mulier, Omaha, Neb.

24. Quick Method of Building Bite Plane for Hawley Retainer. John J. Murray, New York, N. Y.

25. Biomechanics of the Mandible. John Parker, Alameda, Calif.

26. Technique: Distal Movement of Cuspids in Extraction Cases. Noble A. Powell, Ventura, Calif.

27. Headcap Treatment of Early and Mixed Denture Malocclusions. George Prewitt, Lexington, Ky.

28. Method of Moving Canines Distally. Eldridge P. Smith, Lynbrook, N. Y.

29. Something Different in a Lower Impression: X-ray Identification and a Couple of Gadgets. Martin Snyderman, Pittsburgh, Pa.

30. A Method of Comprehensive Analysis and Diagnosis Before Treatment; Facilitating Appliance Design. Charles A. Spahn, Newark, N. J.

31. Advantages of Early Treatment. William J. Speers, Boston, Mass.

32. Predetermining the Overbite and Overjet. Sherwood R. Steadman, St. Paul, Minn.

33. Mixed Dentition Cases Requiring Orthodontic Treatment. Irwin Steuer, Beverly Hills, Calif.

34. An All-Wire Removable Space Obtainer When Spaces Are Too Small for Natural-Sized Replacements. W. E. Stoft, Omaha, Neb.

35. Acrylic Gutta-Percha Technique. David J. Thompson, Elmhurst, Ill.

36. The Use of Isothermal Acrylic in Orthodontics. A. K. Toepfer, Birmingham, Mich.

37. Growth Changes of the Maxillary and Mandibular Dental Arches. J. Romald White, Peoria, Ill., and Gerald V. Barrow, Ann Arbor, Mich.

38. The Improved Rectangular Sliding Sleeve Attachment for the Twin Arch Orthodontic Mechanism. Howard Yost, Grand Island, Neb.

UNIVERSITY CLINICS

University of Toronto

39. A Method of Impregnating and Coating Orthodontic Models With Plastic. Holly Halderson, Toronto, Ontario, Canada.

40. The Construction of Flexible Plastic Tooth Positioners. Robert E. Moyers and Mr. Edward Crocker, Toronto, Ontario, Canada.

University of Illinois

41. Serial Laminagraph Sections of Cadaver Head. Robert M. Ricketts, Chicago, Ill.

42. Detailed Analysis of a Treated Case of Class II, Division 1 Malocclusion. Milton J. Lande, Chicago, Ill.

43. Class III Case Analysis. Dan H. Watkins, Chicago, Ill.

Indiana University

44. The Analysis and Treatment of Buccal Cross-bite Malocclusions in Deciduous and Mixed Dentitions. H. G. Kelley, J. T. Lindquist, R. A. Hanes, and J. W. Adams, Indianapolis, Ind.

State University of Iowa

45. The Stabilizing Plate—An Adjunct in Treatment.

46. Split Hawley for Distal Movement of Molars. L. B. Higley, P. W. Greiwe, and Graduate Students—K. Raak, O. E. Wilson, and T. X. O'Reilly, Iowa City, Iowa.

University of Michigan

47. Similar Results Using the Accepted Johnson, Carey or Edgewise Treatments. Paul V. Ponitz, Battle Creek, Mich.

48. Hints to Facilitate Oliver Guide Plane Construction. Donald E. Benson, Lansing, Mich.

49. The Schwarz Removable Alone or Combined With Johnson, Carey, or Edgewise. Ingrid Daugaard-Jensen, Copenhagen, Denmark.

50. Drawings for Patient Education—Tissue Changes in Tooth Movement. Marvin Davis, Ann Arbor, Mich.

51. Lingual Wires of Stainless Steel With Special Auxiliary Designs. Alexis W. Eastwood, London, England.

52. Vestibular Shield Fabrication Using "Fast-Curing" Acrylics. Fred Fabric, Ann Arbor, Mich.

53. Orthodontic Procedures Adapted to Surgical Resection of an Extreme Mandibular Deformity. Charles H. Meinhold, Brockport, N. Y., and Mason E. Seibel, Durhamville, N. Y.

54. Use of Lower Hawley With Incline for Simple and Comprehensive Treatment. James W. Reynolds, Adrian, Mich.

Northwestern University

55. Intraoral and Model Photography. T. M. Graber, Chicago, Ill.

56. Analysis and Methods of Treatment for the Cleft Palate Patient. Max Kuharich, Chicago, Ill.

57. Functional Analysis of Malocclusion. Vernon Boman, Chicago, Ill.

58. Cephalometric Radiographic Analysis of Malocclusion and Dentofacial Disharmony. J. W. Donavon, Chicago, Ill.

59. Analysis of Cases of Partial Anodontia. John MacLean, Evanston, Ill.

60. A Few Methods of Moving Teeth With the Edgewise (Brackets) Mechanism. James C. Toothaker, South Bend, Ind., and John R. Thompson, Chicago, Ill.

Simplicity in Orthodontic Concept and Treatment. Andrew F. Jackson, Philadelphia, Pa.

Synopsis: Orthodontics is predicated on the infinite variations of the human organism and the uniqueness of the individual. These fundamental and inescapable facts constitute the basis upon which any sound and lasting system of orthodontic therapy can possibly be built. All attempts at exactness of formulation, contrary to these laws of Nature, are futile and illogical attempts to attain the impossible.

There are fortunately broad and comprehensive *Principles* of *Universal Application* which are in perfect harmony with *Infinite Variation* and into which the merits of the many contributions which have been given to the profession over the years, by men of vision, artistic feeling and mechanical genius, readily find their natural places of greatest usefulness.

The following is a list of the contributions from various university students submitted to the Research Committee of the American Association of Orthodontists:

I. Contributions from Orthodontic Department, Columbia University:

Louis Feldstein, D.D.S. An Instrument for Measuring Muscular Forces Acting on the Teeth.

David J. Gross, D.D.S. The Solubility of Enamel as Affected by Cement Under Orthodontic Bands.

Sidney L. Horowitz, D.D.S. An Experimental Study of the Effect of Temporalis Muscle Function on the Architecture of the Mandible in the Rat.

Henry P. Levy, D.D.S. The Tissue Changes Upon the Application of Force on a Rat Molar.

Richard A. Shwalb, D.D.S. Application of the Photoelastic Method of Stress Analysis to Orthodontic Tooth Movement in Bone.

Harold E. Watkins, D.D.S. Experimental Macroglossia in the Rat.

II. Contributions From Orthodontic Department, University of Illinois:

Charles E. Craig, D.D.S. A Study of the Composite Skeletal Patterns of Class I and Class II, Division 1 Malocclusions (Angle).

S. Pruzansky, D.D.S., M.S., R. M. Ricketts, D.D.S., B. G. Sarnat, M.D., D.D.S., and M. B. Engel, D.D.S., M.S. Cephalometric, Electromyographic and Laminagraphic Analysis of Two Cases of Bilateral Subcondylar Osteotomy.

Milton J. Lande, D.D.S. Growth Behavior of Human Bony Profile as Revealed by Serial Cephalometric Roentgenology.

Samuel Pruzansky, D.D.S., and Julius B. Richmond, M.D. The Management of Micrognathia in the Newborn.

Robert M. Ricketts, D.D.S. Variations of the Temporomandibular Joint and Associated Structures as Revealed by Cephalometric Laminagraphy.

Norman T. Speck, D.D.S. A Longitudinal Study of Changes in Form and Length of Lower Human Dental Arches.

III. Contributions From Orthodontic Department, University of Indiana:

J. William Adams, D.D.S. A Method of Increasing X-ray Accuracy of the Dental Region of Cephalometric Headplates.

Hudson G. Kelley, D.D.S. Additional Studies of Arch Length Through the Transition Period.

John T. Lindquist, D.D.S. Studies of Intra-arch Pressures.

IV. Contributions From Orthodontic Department, State University of Iowa:

Paul W. Greiwe. A Study of Tooth Size.

Thomas X. O'Reilly, D.D.S. Widths of Dental Arches and Bigonial and Bizygomatic Dimensions at Certain Ages.

V. Contributions From Orthodontic Department, University of Michigan:

Velma P. Brown, D.D.S., and Ingrid Daugaard-Jensen, D.D.S. Changes in the Dentition From the Early Teens to the Early Twenties—A Longitudinal Cast Study.

VI. Contributions From Orthodontic Department, Northwestern University:

W. B. Doering, D.D.S., M.S.D. A Statistical Analysis of Cranial and Facial Dimension in the Frontal Plane Using Cephalometric Radiographs.

Robert Donovan, D.D.S., M.S.D. A Roentgenographic Study of Various Mandibular Positions in Children With Excellent Dental Occlusions.

T. M. Graber, D.D.S., M.S.D. A Cephalostat and a Radiographic Technique for Making Oriented Frontal and Lateral Head Radiographs on Infants.

Joseph R. Jarabak, D.D.S., M.S.D. Regeneration of the Mandibular Condyle in Condylar Resection in the Rat.

H. G. King, D.D.S., M.S.D. A Histologic Study of the Mandibular Condyles in the Rat Following Unilateral Resection of (1) the Buccal Branch and (2) the Buccal and Marginalis Mandibulae Branches of the Facial Nerve.

I. R. Mannis, D.D.S., M.S.D. The Effects of Pathologic Changes in the Temporomandibular Joint on Facial Growth in the Rat as Determined by Cephalometric and Serial Radiographic Methods.

Ted B. Martin, D.D.S., M.S.D. An Investigation of the Position of the Mandibular Condyle and Its Interpretation From Temporomandibular Joint Radiographs.

Willias J. McCormick, D.D.S. M.S.D. A Cephalometric Roentgenographic Comparison of the Upper Face and Associated Structures in Class II, Division 1 and Class III Malocclusions of the Teeth.

George Parker, D.D.S. M.S.D. A Cephalometric Study of the Growth of the Mandible in the Rat Following Condylectomy.

Richard A. Riedel, D.D.S., M.S.D. A Cephalometric Roentgenographic Study of the Relation of the Maxilla and Associated Parts to the Cranial Base in Normal Occlusion and in Malocclusion of the Teeth.

George H. Wern, D.D.S., M.S.D. A Comparative Cephalometric Study of Facial Pattern in Individuals With Malocclusion and Excellent Occlusion of the Teeth.

C. F. Zwisler, D.D.S., M.S.D. A Cephalometric Radiographic Study of Facial Profile.

VII. Contributions From Orthodontic Department, University of Toronto:

Robert T. Lo, D.D.S. A Study of the Normal Sequence of Eruption of the Permanent Dentition.

Robert E. Moyers, D.D.S., and Edward E. Johns, D.D.S. A Method of Measuring the Inherent Forces Within Orthodontic Appliances in Situ.

VIII. Contributions From Orthodontic Department, Tufts College:

Michael Collito, D.D.S. A Method for Cutting an Undecalcified Bone Specimen Embedded in Acrylic (by title).

Herbert I. Margolis, D.D.S., and Ferdinand S. Hoffmeistr, D.D.S. A Device for Measuring the Forces Exerted by the Lips, Cheeks, and Tongue Against the Dental Arches (by title).

In Memoriam

The following are members of the American Association of Orthodontists who have died since the 1949 session:

Harold C. Beal, Butte, Mont.
William A. Clarke, Atlanta, Ga.
Frank T. Clawson, Plainfield, N. J.
Carl P. Cline, Norfolk, Va.
George W. Grieve, Toronto, Canada.
Howard L. Jones, Detroit, Mich.
S. Lewis Kregarman, New York, N. Y.
Philip T. Meaney, Portland, Ore.
Thomas T. Moore, Columbia, S. C.
William H. Pearson, Norfolk, Va.
Mark H. Perrin, Topeka, Kan.
Will G. Sheffer, San Jose, Calif.

Sessions of American Association of Orthodontists

Year	*Presidents*	*Secretaries*	*Places of Meeting*
1901	*Edward H. Angle	Milton T. Watson	St. Louis
1902	*Edward H. Angle	Milton T. Watson	Philadelphia
1903	*Milton T. Watson	Anna Hopkins	Buffalo
1904	Lloyd S. Lourie	Anna Hopkins	St. Louis (Int'l Dental Cong.)
1905	Lloyd S. Lourie	Anna Hopkins	Chicago
1906	*R. Ottolengui	Frederick S. McKay	New York
1907	*Herbert A. Pullen	Frederick S. McKay	Detroit
1908	*Charles A. Hawley	Frederick S. McKay	Washington
1909	Frank M. Casto	F. C. Kemple	Cleveland
1910	*B. Frank Gray	F. C. Kemple	Denver
1911	Alfred P. Rogers	F. C. Kemple	Boston
1912	*Milton T. Watson	F. C. Kemple	Chicago
1913	B. E. Lischer	F. C. Kemple	Chicago

1914	*Guy B. Hume	W. E. Walker	Toronto
1915	*Frederick C. Kemple	W. E. Walker	San Francisco
1916	*Frederick C. Kemple	F. M. Casto	Pittsburgh (Int'l Dental Cong.)
1917	M. N. Federspiel	F. M. Casto	Excelsior Springs
1918	D. Willard Flint	F. M. Casto	Chicago
1919	O. W. White	F. M. Casto	St. Louis
1920	John V. Mershon	F. M. Casto	Chicago
1921	*J. Lowe Young	Ralph Waldron	Atlantic City
1922	*Martin Dewey	Ralph Waldron	Chicago
1923	*Burt Abell	W. H. Ellis	Chicago
1924	Ralph Waldron	W. H. Ellis	Kansas City
1925	Clinton C. Howard	W. H. Ellis	Atlanta
1926	*William C. Fisher	W. H. Ellis	New York (First Int'l Ortho. Cong.)
1927	Joseph D. Eby	Charles R. Baker	Chicago
1928	Walter H. Ellis	Charles R. Baker	Buffalo
1929	Albert H. Ketcham	Charles R. Baker	Estes Park
1930	Oren A. Oliver	Charles R. Baker	Nashville
1931	*Harry E. Kelsey	Claude R. Wood	St. Louis
1932	Charles R. Baker	Claude R. Wood	Toronto
1933	W. E. Flesher	Claude R. Wood	Oklahoma City
1935	L. M. Waugh	Claude R. Wood	New York
1936	H. C. Pollock	Claude R. Wood	St. Louis
1937	P. G. Spencer	Claude R. Wood	Chicago
1938	James D. McCoy	Claude R. Wood	Kansas City
1939	*Harry A. Allshouse, Jr.	Claude R. Wood	Los Angeles
1940	William A. Murray	Claude R. Wood	Chicago
1941	*Henry U. Barber, Jr.	Max E. Ernst	New York
1942	Claude R. Wood	Max E. Ernst	New Orleans (Inter-American Cong.)
1944	James A. Burrill	Max E. Ernst	Chicago
1946	Archie B. Brusse	Max E. Ernst	Colorado Springs
1948	Earl G. Jones	Max E. Ernst	Columbus, Ohio
1949	Lowrie J. Porter	George R. Moore	New York
1950	Max Ernst	George R. Moore	Chicago

The American Board of Orthodontics

The American Board of Orthodontics wishes to announce that at its meeting held in Chicago May 4, 5, 6, and 7, 1950, certificates were granted to twenty-seven orthodontists.

The next meeting of the Board will be held immediately prior to the April, 1951, session of the American Association of Orthodontists in Louisville, Ky. Orthodontists who desire to be certified by the Board may obtain application blanks from the Secretary, Dr. C. Edward Martinek, 661 Fisher Bldg., Detroit 2, Mich. Applications must be filed not later than March 1, 1951, for consideration at the Louisville meeting.

Following is a list of candidates who fulfilled successfully their requirements and were granted certificates at the 1950 Chicago meeting:

Frederick T. Barich, 636 Church St., Evanston, Ill.
Everett Willis Bedell, 1504 S. Grand Blvd., St. Louis, 4, Mo.
David Ralph Berkson, Robeson Bldg., Champaign, Ill.
Stanley T. Dohrman, Ford Bldg., Great Falls, Mont.
John Joseph Dolce, 2922 Grand Concourse, New York 58, N. Y.
Arthur L. Fern, 57 Pratt St., Hartford, Conn.
Lawrence L. Furstman, 5225 Wilshire Blvd., Los Angeles, 36, Calif.
Solomon David Gosman, 601 Landis Ave., Vineland, N. J.
John Mather Jackson, 1218 Medical Arts Bldg., Philadelphia, Pa.
Ernest LeRoy Johnson, 450 Sutter St., San Francisco, Calif.
Louis Lepine, 614 Medical Arts Bldg., Montreal, Canada.

Edwin Clements Lunsford, 2742 Biscayne Blvd., Miami, Fla.
Michael John Maxian, 211 Park Ave., Manhasset, L. I., N. Y.
John J. Mayers, 64 Metropolitan Oval, New York 62, N. Y.
Gerald T. Milliette, 735 No. Water St., Milwaukee 2, Wis.
Francis M. Murray, 1029 Vermont Ave., Washington, D. C.
Earl H. Rogers, 816 Market Ave., No., Canton, Ohio.
Arthur C. Rohde, 324 E. Wisconsin Ave., Milwaukee 2, Wis.
Emil O. Rosenast, Wilson Bldg., Camden, N. J.
Robert F. Schoenwetter, ERA Bldg., Oshkosh, Wis.
Raymond T. Scull, 132 No. 8th St., Reading, Pa.
Joseph Paul Serafino, 1195 McFaddin St., Beaumont, Texas.
John H. Sillman, 667 Madison Ave., New York 21, N. Y.
Thermon B. Smith, Suite 610 Boyle Bldg., Little Rock, Ark.
W. Frank Wilson, 602 Richland Trust Bldg., Mansfield, Ohio.
Walter W. Winter, 369 West Prairie, Decatur, Ill.
Wendell Leroy Wylie, University of Washington, School of Dentistry, Seattle 5, Wash.

The American Board of Orthodontics held its twenty-first annual meeting at the Edgewater Beach Hotel, Chicago, Ill., on May 4, 5, and 6, just prior to the meeting of the American Association of Orthodontists. The meeting was presided over by President James D. McCoy. This was his tenth year as a director, since he completed an unexpired term of three years previous to his appointment to the full regular term of seven years. Dr. McCoy was succeeded on the Board by Dr. Ernest L. Johnson, of San Francisco, to serve a term of seven years as the director from the Pacific Coast. The members of the Board are now as follows:

Dr. Jos. D. Eby, New York, N. Y., President
Dr. Stephen C. Hopkins, Washington, D. C., Vice-President
Dr. C. Edward Martinek, Detroit, Mich., Secretary
Dr. Reuben E. Olson, Wichita, Kan., Treasurer
Dr. Raymond L. Webster, Providence, R. I.
Dr. Leuman M. Waugh, New York, N. Y.
Dr. Ernest L. Johnson, San Francisco, Calif.

All requests for information or applications should be addressed to:

Dr. C. Edward Martinek, Secretary, Fisher Bldg., Detroit, Mich.

Erratum

Central Section of the American Association of Orthodontists

The dates for the 1950 meeting of the Central Section of the American Association of Orthodontists were listed incorrectly in the April and May issues of the JOURNAL.

The meeting will be held Nov. 26, 27, and 28, 1950, at Cedar Rapids, Iowa.

Great Lakes Society of Orthodontists

The Great Lakes Society of Orthodontists will meet at the Statler Hotel, Detroit, Mich., on Nov. 20, 21, and 22, 1950, Monday through Wednesday noon.

Northeastern Society of Orthodontists

The fall meeting of the Northeastern Society of Orthodontists will be held at the Shoreham Hotel, Washington, D. C., Nov. 6 and 7, 1950.

Southern Society of Orthodontists

The twenty-sixth annual meeting of the Southern Society of Orthodontists will be held at the Sherry Frontenac Hotel, Greater Miami, Florida, Nov. 15, 16, and 17, 1950. Extensive plans and preparations are being made for this meeting. It will be held under the direction of President E. C. Lunsford, of Miami.

FRANK P. BOWYER, Secretary.

Italian Convention on Stomatology

The twenty-fifth annual Italian Convention on Stomatology promoted by the A.M.D.I. (Italian Medico-Dental Association), affiliated society to the F.D.I., will be held from Sept. 26 to 30, 1950, at Stresa (Lake Maggiore).

Denver Summer Seminar

The Thirteenth Denver Summer Seminar will be held this year at the Park Lane Hotel, Denver, Colorado, July 30 through Aug. 4, 1950.

Pan American Odontological Association
A Plan for a Prize Essay Contest Among Undergraduate Dental Students

The Pan American Odontological Association announces a prize essay contest in 1950 among undergraduate students in the dental schools in North, Central, and South America. Each essay should be a discussion of ways to establish better Pan American relations in the dental profession, on a subject (title) to be selected by the author. An *award of one hundred dollars* will be paid to the author of the essay adjudged to be the most useful. That essay will be published in dental journals, after its presentation at the annual meeting of the Pan American Odontological Association in December, 1950. Each essay may be written in its author's mother tongue, under an assumed name, and presented to the Dean of the Dental School for transmission to *Dr. J. A. Salzmann, 654 Madison Avenue, New York, 21, N. Y.*, for receipt by him on or before *Sept. 30, 1950.* After selection of the prize essay, the Dean of the school to which the essay is accredited will be requested to identify the author for payment to him of the award.

J. A. SALZMANN, CHAIRMAN,
WILLIAM J. GIES,
HARRY M. SELDIN,
Committee on Prize Essay Contest.

American Dental Association

A communication from the membership department of the American Dental Association will be sent to all members of the American Association of Orthodontists, asking them to

confirm the fact that they wish their names listed in the new American Dental Association Directory as specialists in orthodontics. All members are requested to respond promptly upon receipt of the communication.

A new dentrifice containing penicillin gives promise of substantially reducing tooth decay, mankind's most common disease, it was reported today by Dr. H. A. Zander, of Tufts College Dental School, Boston, in *The Journal of the American Dental Association.*

Dr. Zander said that a two-year experiment had revealed that a group of school children who used a tooth powder containing penicillin were found to have an average of 54 per cent less tooth decay than a similar group of children who used a neutral dentifrice.

The A.D.A. journal editorially described the report as holding "promise of providing the (dental) profession with a new weapon in its fight to control dental caries (decay)." It cautioned, however, against viewing the new product, which is not yet on the market, as "a miracle agent."

Dr. Zander, who is professor of oral pediatrics at Tufts Dental School, based his report on a two-year research study of 352 children between 6 and 14 years of age in two elementary schools in Walpole, Mass.

During the test period, an experimental group of 235 boys and girls in one school brushed their teeth with a tooth powder containing 500 units of potassium penicillin per gram of tooth powder. The other 117 pupils in the second school served as a control group and used the same tooth powder without the penicillin.

All the children were taught the proper procedure in brushing the teeth. All brushed their teeth once daily in their classrooms under supervision and were instructed to use the tooth powder at home morning and evening.

At the end of the first year, x-ray examinations revealed that the children who used the penicillin dentifrice had developed an average of only 1.34 new cavities compared with an average of 3.00 for the control group, a reduction of 55.3 per cent. At the end of the second year, x-ray examinations disclosed that the penicillin group had 53.8 per cent less new cavities than the control group.

Dr. Zander reported that he had found very few irritating reactions among the school children who used the penicillin dentifrice.

Similar results were reported for a three-month study of 4,480 adults, including 3,416 prison inmates. In this latter group, he said, allergic reactions were found to be less than 1 per cent of the total.

In a separate comment, the A.D.A. Council on Dental Therapeutics, which evaluates dental products, urged that additional tests of the safety of the penicillin dentifrice be made before the product is offered for over-the-counter sale to the public.

Pointing out that it is not yet definitely known whether daily use of penicillin in a dentifrice will produce a resistance to the drug, the Council report stated:

"The predominant position of penicillin as an anti-infective agent in modern therapeutic practice suggests that every reasonable precaution be observed in an attempt to avoid conditions which might deny the benefit of penicillin to critically ill patients."

Notes of Interest

Barney C. Cooksey, B.A., D.D.S., M.S.D., announces the limitation of his practice to orthodontics exclusively at the Taylor-Vaughan Building, 101½ North Travis, Sherman, Texas.

William E. Flesher, D.D.S., and Marion A. Flesher, D.D.S., announce the association of William N. Flesher, D.D.S., practice limited to orthodontics, Medical Arts Bldg., Oklahoma City, Okla.

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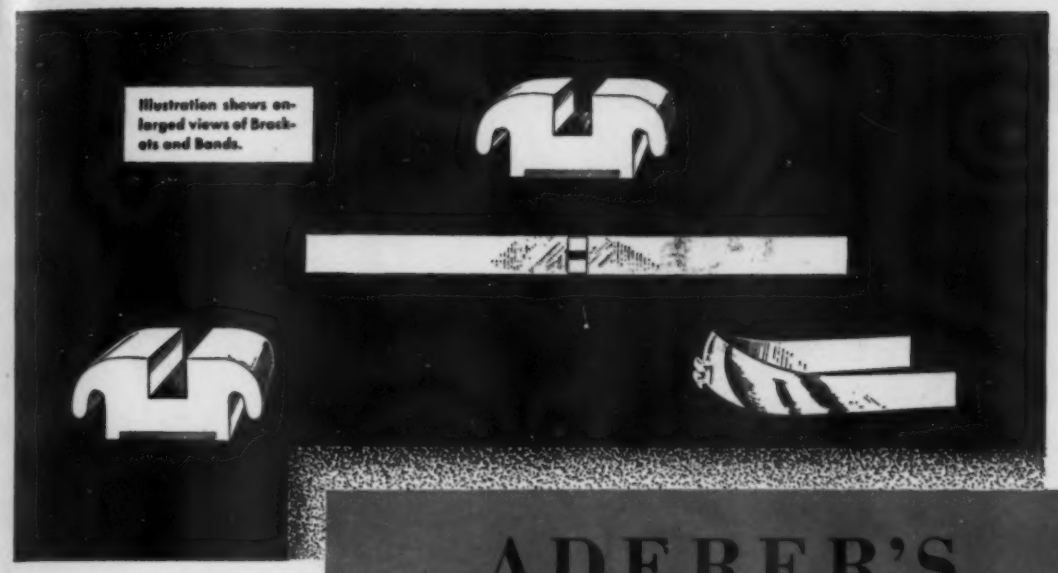

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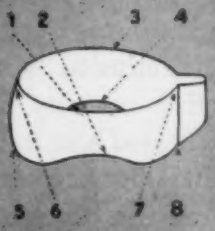

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